NOVEMBER, 1959

AMERICAN AVIATION Publications

airlift

WORLD AIR TRANSPORTATION

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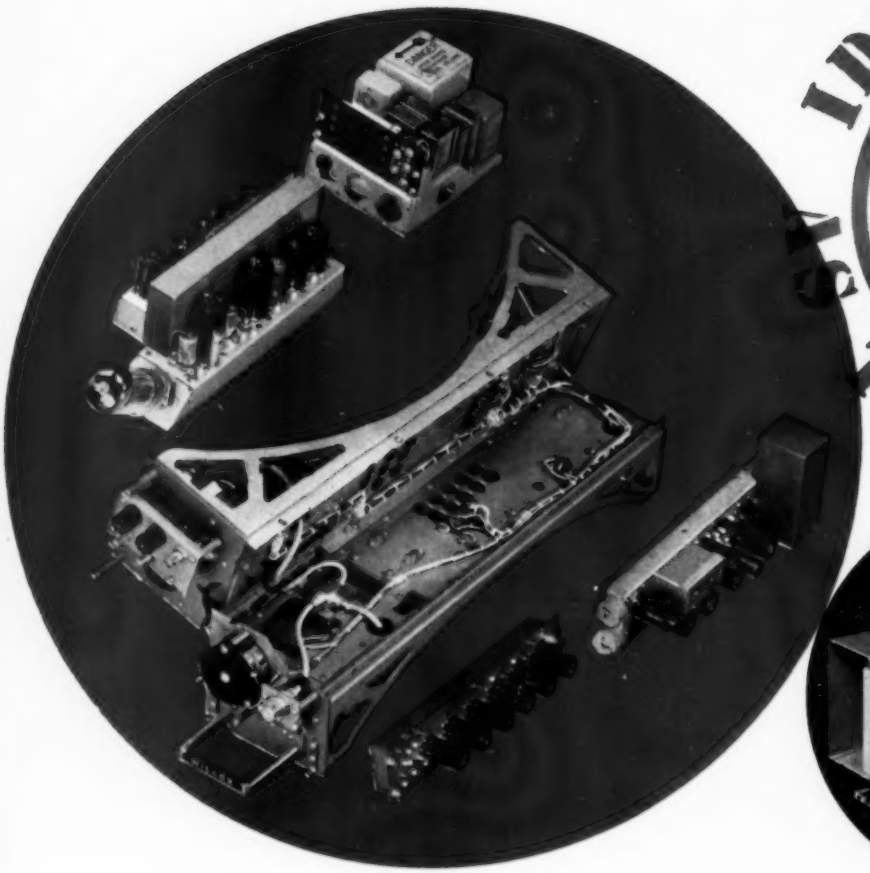
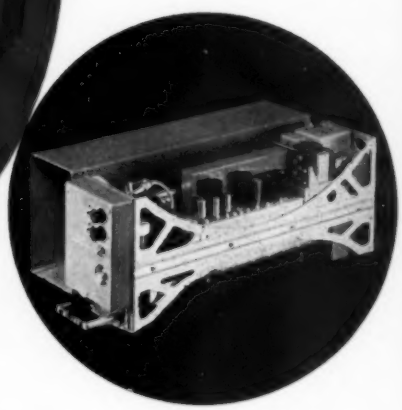
- SPECIAL REPORT: JET NOISE
- ARE THE TURBINES PAYING OFF?
- AIRPORT SPECTACULAR AT L.A.





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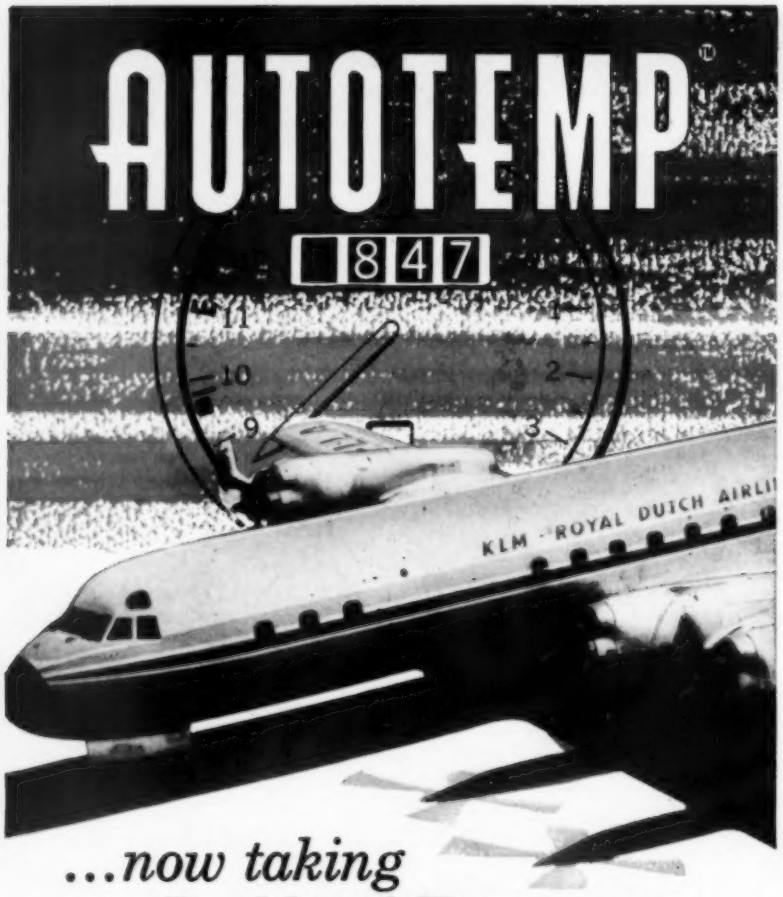

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ART
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PRODUCTION
John Walen, Manager .....Elsie Gray

EDITORIAL ADDRESS
1001 Vermont Ave., N.W., Washington 5, D.C., U.S.A.
Phone: Sterling 3-5400 — Cable: AMERAV

BUSINESS STAFF
Arthur J. Newfield .....Assistant Publisher
Gerald T. O'Mara .....Adv. Sales Mgr.
Lawrence L. Brettner .....Circulation Director
George F. Peterson ....Circulation Service Mgr.

REGIONAL OFFICES
New York City: 20 East 46th St., Gerald T. O'Mara. Phone: Yukon 6-3900.
Chicago: 139 N. Clark St. Phone: Central 6-5804.
West Coast: 8929 Wilshire Blvd., Beverly Hills, Calif. Phone: Oleander 5-9161 and Olympia 7-1555.
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SUBSCRIPTION RATES
Single copy 50¢. For U.S. Possessions, Canada, and Postal Union Countries 3, 5 & 6—$3.00 for 1 year, $5.00 for 2 years, $6.00 for 3 years. Other countries—$5.00 for 1 year, $9.00 for 2 years, $12.00 for 3 years. Subscriptions limited to aviation industry personnel.

INCORPORATES
Airports and Air Carriers; Aviation Equipment; The American Pilot; Aviation Sales & Services; U.S. Aviation; American Airports; Airports & Heliports and American Aviation. All rights to these names are reserved.

CHANGE OF ADDRESS
Send old address (exactly as it appears on mailing label on your copy of magazine) and new address, including zone number if any to AIRLIFT, 1001 Vermont Avenue, N.W., Washington 5, D.C. Allow two weeks for change.

PUBLISHING INFORMATION
Published once a month by American Aviation Publications, Inc., Washington, D.C. Printed at The Telegraph Press, Harrisburg, Pa. Second class postage paid at Washington, D.C., and at additional mailing offices.

Wayne W. Parrish .....President & Publisher
Leonard A. Eiserer .....Vice Pres. & Gen. Mgr.
Fred S. Hunter .....Vice Pres. & Editorial Dir.

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ABP

NOVEMBER, 1959—VOL. 23, NO. 6

airlift

(U.S. Reg. Pdg.)

WORLD AIR TRANSPORTATION

An AMERICAN AVIATION Publication Since 1937

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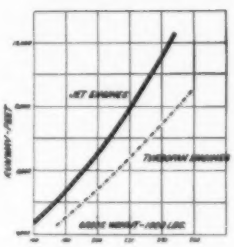
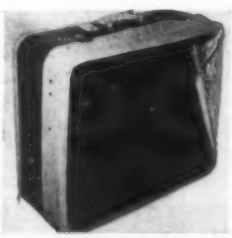
The aviation industry's No. 1 jet problem, already a sore subject in one big community, is in for some special attention from the FAA. For a special round-up report, see p. 21.

JET PROGRESS REPORT
How are the new jets performing compared to their piston predecessors? Read Costrender's analysis, p. 22. Also, don't miss *AIRLIFT'S* summary of 707 technical operations, p. 25.



AIR CARGO'S BOTTLENECK
With jets, the ground slowdown that hampers airfreight growth becomes increasingly obvious. Read how one of the nation's leading cartagemen would solve the problem. See p. 34.

BAGS THAT COST MILLIONS
The answer to high claims for damaged baggage has eluded U.S. airlines for years. Does it lie in a "seal of approval" that would discourage flimsy luggage. Will one come? See p. 40.



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This Month's Cover: A . . . "dramatic 'theme' structure of delicate flying buttresses supporting a high level restaurant" . . . characterize the plan Charles Luckman and Associates handed Los Angeles for its jet-designed airport. Architect/author Luckman describes it on pages 26-29.

Coming Next Issue: An on-the-spot report on the newest of air transport salesmen on the U.S. market: Canadair. Also, a technical report on jet engine by-pass ratios. Latest jet operating costs. Special meeting report: ATA Engineering and Maintenance Conference.

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YEAR	PASSENGERS	MAIL & EXPRESS	FREIGHT	TRIP PROFIT
1968	103	500 MAIL LB. 250 EXPRESS LB.	4,165 LB.	$685
1966	88	500 MAIL LB. 250 EXPRESS LB.	3,265 LB.	$434
1964	76	500 MAIL LB. 250 EXPRESS LB.	2,555 LB.	$226
1962	65	500 MAIL LB. 250 EXPRESS LB.	2,000 LB.	$ 39

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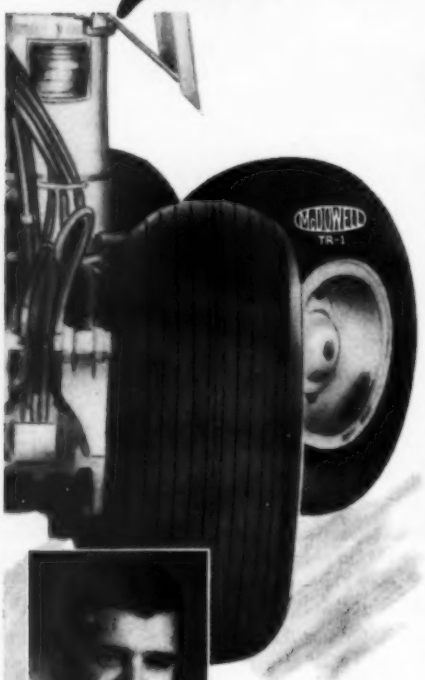

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Failure at Honolulu Means Open Rates

It was bound to happen. The world's airlines are poles apart on international fares. Jets and excess capacity have plunged the operators into a new and uncertain era.

As of next April first, an open rate situation will exist on virtually all of the important international routes of the globe.

After three weeks of day and night wrangling at Honolulu last month, the three regional IATA traffic conferences had to give up in failure.

Does this mean a disastrous rate war? Not very likely. Technically, of course, any carrier can file for any fare it wants after April and technically this could mean chaos. But there have been smaller cases of open rates before without disaster. In almost all instances governments must approve fares and the government protecting its own national carrier or carriers is most unlikely to permit competition to undercut.

An open rate for a year may be healthy. Unquestionably it will lead to a lowering of fares on many routes through the introduction of economy classes where these have not existed heretofore. Fares have been much too high in many parts of the world. With seat capacity gaining at a somewhat frightening rate, lower fares would seem to be essential to increasing business.

Failure to reach agreement at Honolulu is symptomatic of the enormous and increasing complexity and diversity of interests of the airlines of the world. The introduction of jets and turboprops has merely intensified this complexity. It is becoming exceedingly difficult to reconcile the interests of global trunk operators with the interests of smaller and more national carriers, especially those without jets. There is a surprisingly high number of smaller international carriers who have no interest in developing new traffic through the introduction of lower fares.

It is British Overseas Airways Corp. which is being blamed for wrecking the traffic conferences by maintaining an inflexible position in favor of a rather drastic reduction in fares. But BOAC will have many seats to fill next year. It is faced with strong opposition by British independents who have held out promises of drastic fare reductions if the U.K. government will extend their operating rights. In the long run BOAC had no choice but to hold out for lower fares and in the long run, too, this could well be healthy for the industry as a whole.

The real blame for failure at Honolulu, if indeed success was possible at all, was given in blunt terms to the IATA general assembly in Tokyo by W. Gordon Wood, the capable v.p. of Trans-Canada Air Lines, who had the unhappy chore of being traffic conference chairman. The blame, he said, rested with the chief executives of the world's airlines who sent second and third echelon men to the traffic conferences with no authority to compromise or negotiate. It is clear that if the airlines want agreement on fares, top managements must participate to a degree which they have not done to date.

The outlook will be fluid. It is hoped that the beneficiary will be the public. A rate war would be disastrous, but rate wars in the airline business are next to impossible because of government controls. What can result is a general lowering of fares. This is needed and it can be good for everyone.

Where Goeth IATA?

TOKYO—That odd symbol of Mid-Victorian pomp and protocol, the International Air Transport Association, socialized its way through its 15th annual general assembly in Tokyo in mid-October. As usual, most of the working executives of the world's airlines remained home to run their businesses.

IATA lives in a strange never-never world of its own, the world of Sir William Hildred, its director general, and of millions of words that really say nothing, of secretaries, and formalities, and an unwritten rule that nothing, but nothing, must ever be said in the assembly that might upset anyone.

Of course the august body was rudely jolted for the first time in its history by the failure of the Honolulu traffic conferences, and possibly a few of the delegates awakened to the fact that top managements need to make IATA a truly working body discussing practical problems of the day.

But by and large IATA is a strange rubber-stamp organization which bores busy people but delights those who look forward to an annual holiday as the guest of some carrier. And let it be said that the host carrier this year, Japan Air Lines, set a new high in arrangements and handling, an extraordinarily effective and minutely-planned effort which won much goodwill for the industrious Japs.

Perhaps the most amazing feature of IATA, a feature which is unique throughout the world, is the spectacle of the chief paid employe, Sir William Hildred, usurping the limelight from the chief executives of the world's airlines. It is a case of the servant becoming the master, and there is no parallel to be found anywhere for this presumption of spokesmanship. IATA has long since become the private preserve of Sir William.

At the opening Tokyo session, for example, there was Sir William talking over-long as usual, rambling on about how he would like to hire a bicycle and roam the back streets of old Tokyo. A jolly subject

Continued on page 11

PASSENGERS, CARGO, OR MIXED LOADS – AW ARGOSY TAKES THEI
ALL COMFORTABLY AND ECONOMICALLY

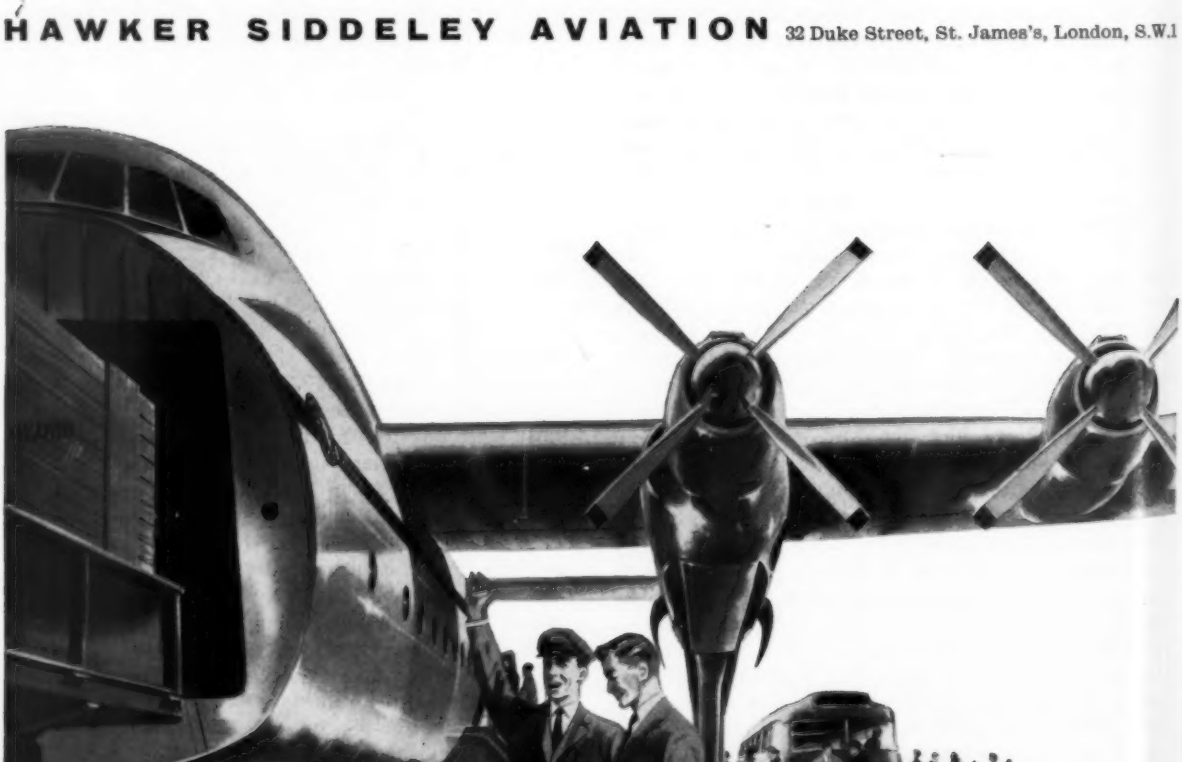
RIGHT FOR VERSATILITY

The AW Argosy carries up to 83 passengers or 13¼ short tons of freight, or any combination within this payload. A typical mixed load would be over 7 tons of freight and 35 passengers. Rolls-Royce Dart turbo-prop power ensures a low noise level for the passengers seated in pressurised comfort. Large fore-and-aft freight loading doors reduce turnround to 20 minutes.
Components and systems are all well-tried and chosen for easy maintenance. Both passengers and freight can be loaded simultaneously.

PERFORMANCE *Power: 4 Rolls-Royce Darts. Aircraft cruising speed: (14,000 r.p.m.) 296 m.p.h. (475 km./hr.). Maximum payload: 27,000 lb. (12,247 kg.). Range with fuel reserves and 20,000 lb. (9,072 kg.) payload: 1,000 st.m. (1.610 kil.). Size of hold: 46 ft. 8 in. (14.23 m.) x 10 ft. (3.05 m.); floor area 426 sq. ft. (39.6 sq.m.).*

THE ARGOSY BRINGS THE COST OF AIR FREIGHT DOWN TO EARTH

HAWKER SIDDELEY AVIATION 32 Duke Street, St. James's, London, S.W.1



for a ladies' tea, perhaps, but rather ridiculous at a meeting presumed to be for leaders of a great world enterprise.

Was it any wonder, then, that J. R. D. Tata, of Air India, one of the world's leading industrialists, was making paper airplanes at the head table during Sir William's strange oratory, and threatening by gestures to launch the paper planes out over the audience as a defiant gesture of rebellion against boredom, stuffiness and a waste of time?

IATA is a fine social occasion. It listens to a lot of reports long since already read and digested. Occasionally it is even rudely upset by a live issue. But IATA is more than ever detached from workaday problems. If it is to be a truly potent and representative body, the members who pay the freight should take a new look, retrieve their organization from the paid staff, and reorganize along realistic lines. There's heavy business at hand.

Wayne W. Parrish

LETTERS

'Ouch' on the Other Foot

To the Editor:

This is with reference to your article in the August *AIRLIFT* entitled "Ouch! Those High Limo Rates."

The AGTA is conducting a detailed stage-to-stage survey on those cities outlined in your article. Until we have such detailed information, this reply to you will deal mainly in generalities and in the primary and basic approach to fixing airline ground transportation rates.

1. No one is getting rich in rendering airline ground transportation services.

In 1957 the average operating ratio for AGTA members was 93.4%. This means that before taxes the airline ground transportation operators retained 6-6/10¢ for profit out of each dollar of income. In 1958 the operating rate was reduced to 95.2%, or 4-8/10 of every dollar, before taxes, was retained as profit. The figures for 1959 are not yet complete.

In an industry as sensitive to economics, the whimsy of politicians, and all of the other ordinary struggles encountered by ground transportation operations, the measure of profit can by any standard be considered a humble one.

2. Are you aware that the fees and taxes charged to do business at many airports varied from 0% to 27.25% of the gross passenger revenue? These fees and airport charges include only direct items and cover such things as airport fees, road use tax, passenger seat tax, common carrier tax, etc.

Thus from one airport to another the amount of gross fares deducted from the passenger revenue of the operator can vary from 0¢ to 27-½¢ out of every dollar. This factor alone would create more than a little deviation in airport fees.

3. Labor, which makes up between 53% and 55% of the total cost of rendering airport services, on a national average varies according to location and conditions from $1.00 an hour to $2.94 an hour. (In the case of taxicabs, drivers are sometimes paid on the basis of a percentage of gross revenues. To our knowledge, this varies from 32.50% to 50% of the gross according to location and driver-company agreement.) Add to these basic labor rates about 27% for fringe benefits and you find a very basic and fundamental further cause for a variation in airport rates.

4. Airport ground transportation operators in more than half of the U.S. and the provinces of Canada have their fares controlled by a federal, state, county or municipal public service, public utility, interstate commerce, railroad or other similar type of commission, though it might be called by a different name. More than 65% of airline passengers ride in airport limousines whose fares are controlled by the public utility governing body having jurisdiction over such services.

5. The general costs of doing business, while a minor factor as compared to points two and three above, varies considerably from location to location. By this we mean rents, supplies, etc.

6. After you have completed these basic ingredients contributing to the cost of doing business, you must take into consideration further elements that contribute to the construction of airport rates. Probably the two most important of these are load factors and density of passenger potential. Are you aware that companies at some of the places outlined in your article maintain an airport service for the arrival of two or three airplanes during the off-peak hours and sometimes as few as one?

At several locations outlined by you the arrival of one airplane requires the maintaining of an eight hour driver shift. If the limousine were to be filled, it could not pay for the driver's wages alone. While this might be an extreme, the same type of conditions exist in general at most airports throughout North America at one time or another during a 24-hour period. The official airline ground transportation operator must provide service 24 hours a day, 365 days a year, and not just during periods when it is lucrative to do so.

7. Airport ground transportation, as compared to inter-city bus transportation, cannot use mileage as the basis for cost or rates. Few ground transportation vehicles log 100 miles per shift, and in fact, there are many instances where 50 miles a shift are not logged. Thus, in airport ground transportation, standby waiting time, operating time and operating mileage together become the predominant cost factors.

In the case of airline ground transportation a much more accurate cost picture can be developed on an hourly basis than a mileage basis. How many hours did that airport limousine stand by at the airport in order to be available to render services for the ground transportation passenger?

How many pieces of equipment does the ground transportation operator have to maintain in order to accommodate all passengers at peak airline arrival and departure hours which occur once or twice every 24 hours? How many pieces of this equipment operate only once daily? How many drivers drive only one round trip per shift to the airport? Did you know that on the national average a driver makes less than 2½ round trips per shift to the airport?

Our membership certainly seriously objected to your language, such as "charge as you please," "offenders," and "limo operations, at best only 'fair' in the past in all-around service, are becoming a weak spot in the comfort of downtown to downtown trip of the air passenger."

For your information, airline ground transportation in North America is the finest to be found anywhere in the world. Airline ground transportation operators in North America spend more money on engineering, designing and contracting for the improvement of new airport limousines and coaches than the rest of the world combined. Our operators spend more money for new airport equipment than all of the rest of the world combined.

We are proud of North American airline ground transportation and, I believe, justly so. If *AIRLIFT* would like to make a constructive criticism of our services, then certainly this organization would find no voice of objection, but we would lend you every possible assistance in seeing that all the facts were made available to you.

HERBERT J. DEGRAFF
Exec. Sec. & Gen. Mgr.
Airline Ground Trans. Assn., Inc.,
New York, N.Y.

Poverty Policy on Profits

To the Editor:

One railroad, the Union Pacific, earned more money during the first six months of 1959 than all 12 certificated airlines combined for the same period. Why can't the airlines earn more money?

The dogmatic CAB Airline Poverty Policy has jeopardized the financial growth of the airlines for more than 20 years. It has always been the same old story—big volume but mostly red figures. When a profit was made, CAB saw to it that it did not last long, and in all cases "mouse trap" profits were at starvation levels.

The airlines have a large jet bill to pay. If the CAB feels that the meager $60 million net earned in 1959 was too much (and which precipitated the fare investigation) how can the jets be paid for? As I pointed out to Mr. Durfee in one

"Sell with virtually
no inventory,
no warehouse?
Easy—we use
Delta Air Freight"

Georgia Business Machine Co. (Office machines) sells from sample demonstrators, calls orders in to New York, provides next day delivery to customers—with Delta Air Freight.

"This is a streamlined operation," says H. A. Fleming, President, "where costs must be kept to an absolute minimum. We have eliminated warehouses and have virtually no capital tied up in stock. We provide customers with as fast if not faster delivery than if we trucked from warehouses. Delta Air Freight is a major reason for our success."

Profit from Delta's
BIG PLUS

Delta operates all-cargo flights and in addition carries freight on every passenger flight, including Jets. All-cargo flights serve Atlanta • Chicago • Cincinnati Charlotte • Dallas • Houston • Miami New York • New Orleans • Orlando Philadelphia • Tampa

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AIR FREIGHT
DOOR-TO-DOOR

GENERAL OFFICES: ATLANTA AIRPORT, ATLANTA, GA.

LETTERS

of my five letters to him . . . the airlines should be earning a minimum of $300 million per year or at least five times the figure which the CAB thinks is too high.

As a champion of the airlines for many years, why not organize a crusade to lift the airlines out of the poverty level to a more healthy financial position to which this important industry is entitled? Why don't the airlines make a concerted appeal to the President?

As this CAB devastation has been unchecked for 20 years, don't you feel it is time for immediate genuine action for the salvation of the airlines?

J. LEE BURNESTON
Larchmont, N.Y.

Down With MATS

To the Editor:

Your editorial in the September issue of *AIRLIFT* entitled "Quesada O, Douglas O, Cargo O" was read with great interest.

This particular subject is one in which our committee, and it is believed pilots of all airlines, is extremely interested. We who are confined to a solely international route structure are concerned by the competitive impact and the implications of the continued commercial type operation conducted by MATS.

Your past action and editorials on this subject have been followed with great interest. It is hoped that greater support for the position advanced by Senator Monroney and those in Congress who understand his program will be evidenced when this problem again comes before Congress.

Our committee has been concerned with several aspects of international airline competition. We have presented a report to Congress on this subject, and followed this with a page in the special labor section of the *Washington Daily News* on September 4, 1959.

If our committee can be of service to you in this problem, please say so. Again, our congratulations and appreciation for the strong position you have taken in opposing MATS expansion. Keep up the good fight.

A. L. PROPPS, JR., Chairman
Master Route Committee
Miami 57, Fla.

LAS Applauds Idlewild Issue

To the Editor:

The September issue, featuring the special report on Idlewild, emphasizes *AIRLIFT's* fine tradition of air transportation coverage.

We, at Lockheed Aircraft Service, appreciate particularly the very nice things said about our Idlewild maintenance base —LAS-New York.

RALPH J. OSBORN, *President*
Lockheed Aircraft Service, Inc.
Ontario, Calif.

Air Freight Bandwagon

To the Editor:

After reading recent publications of *AIRLIFT* as well as other recent publications, it occurs to me that some airlines and individuals have finally seen the light in regard to the future of the Air Freight Industry.

Some very notable people are now getting on the bandwagon in support. This is good. These notable people, however, should give credit where credit is due and not try to capitalize for themselves on the progress that has been made to date.

A great deal of money, time and effort were put forth by the pioneers in this business while some of the larger airlines sat by the wayside. Now these larger airlines have taken steps to move in and take the business that has been built up for them.

How about support and giving credit when due or is *AIRLIFT* in the same class as the operators who will attempt to reap a windfall?

HOWARD W. SMITH
19848 Roscoe Blvd.
Canoga Park, Calif.

Correction

A tabulation of airline president's salaries (*AIRLIFT*, Oct. p. 73) shows (James W. Austin,) Northeast at $48,000. The correct figure is $36,000.

When & Where

NOVEMBER

Nov. 2-4—Institute of the Aeronautical Sciences, annual national midwestern meeting, Hotel Lassen, Wichita, Kan.

Nov. 2-6—American Society for Metals, 41st national metal exposition and congress, International Amphitheatre, Chicago.

Nov. 3-5—IRE 11th annual mid-American electronics conference, Hotel Muehlebach, Kansas City, Mo.

Nov. 4-6—National Automatic Control Conference, sponsored by IRE, AIEE, ISA and ASME, Sheraton Hotel, Dallas.

Nov. 9—IATA Traffic Conference 2 Agency Committee, 33rd meeting, Lisbon.

Nov. 9-20—American University, 13th annual air transportation institute, Washington, D.C.

Nov. 12-13—Association of Local Transport Airlines, quarterly regional meeting.

Nov. 12-13—Association of Local Transport Airlines, quarterly regional meeting, Marott Hotel, Indianapolis.

Nov. 16-20—American Rocket Society, 14th annual meeting, Washington, D.C.

Nov. 16-20—Fifth International Automation Congress and Exposition, New York Trade Show Building, New York City. Sponsored by the Materials Handling Division of the American Society of Mechanical Engineers.

Nov. 17—IATA European Traffic Handling Committee, fifth meeting, Lisbon.

Nov. 17-18—National Air Transportation Meeting, Fairmont Hotel, San Francisco.

Nov. 17-19—ATA Air Traffic Conference, Olympic Hotel, Seattle.

Nov. 17-19—ATA Purchasing Committee, Hotel Knickerbocker, Chicago.

Nov. 17-19—Aviation Distributors and Manufacturers Assn., 34th meeting, Diplomat Hotel and Country Club, Hollywood, Fla.

Nov. 18-19—Airlines Electronic Engineering Committee, Hotel Statler, Dallas.

Nov. 18-20—Vickers Aircraft Hydraulics Conference, Park Shelton Hotel, Detroit.

Nov. 23—IATA Technical Committee, 30th meeting, Paris.

DECEMBER

Dec. 8-9—Southwest Society of Aircraft Material and Process Engineers, aerospace finishing symposium, Hotel Texas, Ft. Worth.

Dec. 15—ATA board of directors meeting, Washington, D.C.

Dec. 16—ATA membership meeting, Statler Hotel, Washington, D.C.

Dec. 17—Wright memorial dinner, Sheraton Park Hotel, Washington, D.C.

CAB at a Standstill

CAB has been at a virtual standstill. Important cases have been shelved. All oral arguments are postponed. Reason: A CAB order isn't effective until date of adoption, usually the day before issuance. At time of adoption, a quorum of at least three members who voted must still be on the Board. And only two present members can be expected to be around long. Louis J. Hector resigned. Harmar Denny retires Dec. 31. Chairman James R. Durfee's nomination to a judgeship will get Senate hearings early next year. Things will remain stymied unless Administration names at least one new member soon. Among cases being held up is the General Passenger Fare Investigation.

Russia can have civil air talks with U.S. any time it wants them, U.S. officials say. About a year ago, Russians claimed U.S. was refusing to negotiate. U.S denied this in a formal note, said talks could start anytime USSR wanted to sit down and discuss the matter seriously. But Soviets have never taken the initiative.

Airlines Have Record September

Biggest September in history was recorded by domestic trunks. Revenue passenger miles totaled 2.5 billion, up 19% from a year ago and not far below the 2.71 billion for August, best 1959 month. Available seat-miles of 3.94 billion were 9.4% ahead of last year. Load factor was a healthy 63.56%, up 5.32 points.

Watch for a move by FAA to borrow top airline or manufacturing talent to aid in drafting future civil air rules, such as jet performance. Approach is favored by Flight Standards head W. B. Davis and his engineering chief, Henry Weeks.

Manufacturers Burned up at IATA

New low level was reached in relations between aircraft manufacturers and management of International Air Transport Assn. at 15th IATA Assembly in Tokyo last month. IATA thinks the aircraft salesmen tend to take over the week's show to the detriment of IATA activities. So this year, IATA saw to it that manufacturers weren't invited to official receptions, a snub which burned to a crisp a number of U.S. aircraft executives. Also, IATA shoved the party given by manufacturers of all countries to the final night of the assembly. Airline operators themselves partake of aircraft hospitality and seem to enjoy it. A lot of business is also done. It's the IATA paid staff that's blamed for the bad relations.

Now that the new, more favorable air express contract is in effect between airlines and Railway Express Agency (*AIRLIFT*, October), the airlines hope for one more eventual change: eliminate the word "railway" from REA's name. Suggested new name: The Express Company.

North Central's Freight Boom

Phenomenal example of unpromoted airfreight growth: North Central's rapid rise in rankings among locals since it started carrying freight only five months ago. Although final September rankings aren't in, probably only Frontier exceeded North Central's 44,209 freight ton-miles. Surprisingly, the new service hasn't hurt the express business. Freight jumped from 303,881 lbs. in August to 421,509 lbs. in September; express gained from 710,909 lbs. to 762,353 lbs.

Sales appeal of turbine aircraft is cited by American Airlines. In first eight months of operation, it sold nine out of 10 available seats on Boeing 707s and Lockheed Electras. This is higher than any other new plane. Initial DC-7 operations, for example, showed 75% load factor. Turbines have captured public's interest and patronage as no other plane ever has been able to do, AA says.

Turbine Edge for Lockheed

Recent addition by Lockheed of Capital Airlines as an Electra customer gives it an edge in one sales area: the turbine with the most U.S. customers. It has seven of the 13 major lines (including Pan Am). Both Douglas and Boeing each have six. The Convair 880/600 combination has four.

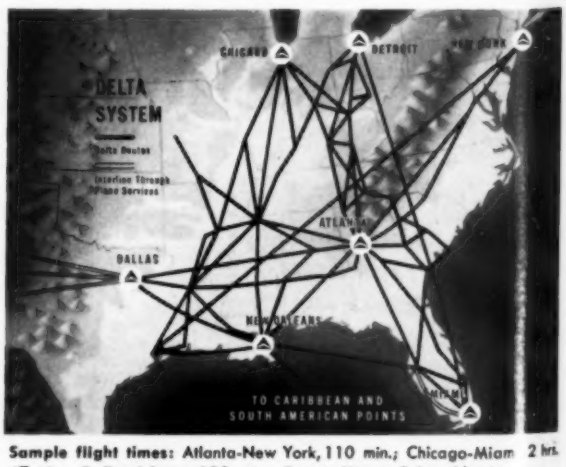
Delta DC-8 Jets link 7 Great American Cities*

–with luxury and economy on every flight

Delta's magnificent new DC-8's have pioneered jet speed and comfort between North and South. The DC-8, planned for *passengers* from its inception, sets a new standard of luxury for first class travel and also provides equal speed plus economy in a thrifty supercoach section on every flight.

***As additional aircraft deliveries and availability of adequate airport facilities permit, Delta will extend its jetliner service to many more cities in addition to those shown on the route map below.**

Delta's Royal Jet Service features luxurious reclining seats with individual tables, champagne luncheons and dinners in first class; hot meals in supercoach.



Sample flight times: Atlanta-New York, 110 min.; Chicago-Miami 2 hrs. 47 min.; Dallas-Atlanta, 100 min.; Detroit-Miami, 2 hrs. 46 min.

DELTA
AIR LINES

IATA Deadlocked on Fares

Refusal of British Overseas Airways Corp. to compromise in its demands for a 20% fare cut on all routes where currently there is no economy class threw the IATA traffic conferences at Honolulu into a deadlock, and the world's airlines face an open situation on many routes next Apr. 1 (see Personal View, p. 9).

Most other carriers openly opposed such a big fare reduction. Only areas where closed rates were agreed upon were within Europe and the Middle East, South Atlantic, and in world cargo. Specifically, conferences were unable to agree on BOAC's cut-rate proposal for Europe to Africa and east to India, Far East and Australia, and this made it impossible to agree on interrelated routes across the Atlantic and Pacific. Other items in dispute were seating configurations and number of classes of service to be offered. BOAC wants to keep three classes: first, tourist and economy. Others see little need for tourist.

CAB Proposes Nonpriority Mail Rate

When the Post Office expands carriage of nonpriority mail by air, the airlines should be paid for carrying it at the same level of rates they now receive on present experimental routes, CAB said. The Board's show-cause order was issued after conferences with the PO. Reaction of at least some airlines was that the proposed rates are too low. They were also disappointed that the PO plans to have this mail (all classes other than air mail and air parcel post) continue to be carried space-available.

The PO said initial expansion of nonpriority mail will be between 76 additional pairs of points within the 48 contiguous states, to and from Hawaii, Alaska and Puerto Rico. Total initial increase is estimated at 34,000 tons and 45 million ton-miles. CAB's proposed rates would yield the carriers 19¢ a ton-mile, or about half the present air mail rate. Examples: New York-Los Angeles, 16.4¢; New York-Chicago, 19.6¢; Washington-Chicago, 20.6¢.

Hewitt Heads Riddle; Argosy Canceled

Robert M. Hewitt was elected president of Riddle Airlines, replacing George Giles, who resigned following a policy dispute (*AIRLIFT*, September). Hewitt, also head of Robert Hewitt Associates, aviation consultants, denied that the financially-pressed cargo line planned to suspend operations. Riddle was hit hard when it lost its military Logair contracts at mid-year. Hewitt said the provisional order for four British Argosy turboprop airfreighters will be canceled, and that operating expenses and overhead will be sharply reduced.

NWA Named to Serve Hong Kong

Northwest Airlines has been designated by CAB to serve Hong Kong on its route beyond Tokyo. Pan American at present is the only U.S. line authorized by the British to serve Hong Kong. Before NWA can begin flights, the U.S. State Dept. must inform the British of the U.S. decision, and the British must issue a permit for the service. NWA fought bitterly and unsuccessfully against a BOAC stop at Tokyo on the route from San Francisco.

British Appoint Aviation Minister

Creation of a new Ministry of Aviation was welcomed by Britain's air transport and manufacturing industries, both of whom now come under jurisdiction of Duncan Sandys, the new Minister. The office was created out of the civil aviation activities of the Ministry of Transport and Civil Aviation and manufacturing and research activities of the Ministry of Supply.

Hercules Canceled; Slick Buys CL-44s

Pan American World Airways and Slick Airways canceled orders for Lockheed Super Hercules freighters, and Slick gave Canadair a letter of intent to buy two CL-44 swingtail turboprop cargo planes, with option on four. PAA's order for 12 Hercules and Slick's for six were contingent on a military order for the plane and USAF funding of airframe development and the T61 engine. Lockheed did not get a military contract by the deadline.

Capital Orders 880s, Electras

Capital Airlines ordered seven Convair 880s and five Lockheed Electras, the former for delivery in October-December 1960, the latter in May-July 1960. The airline, which originally favored Convair, later considered buying Boeing 720s but finally returned to the Convair camp.

The Convair, designated Model 22M, will have General Electric CJ805-3B engines, which are up 4% in thrust and down 2% in specific fuel consumption. This model introduces new weight specs for the 880: 191,000 lbs. max. takeoff wt., 155,000 lbs. landing wt., 125,500 lbs. zero fuel wt. Planes will have 88 first-class seats and a nine-seat lounge. Convair-Electra financing is being negotiated. Vickers agreed to extend length of time for payments on Capital's $37 million Viscount account.

LAA Buys Five S-61s

Los Angeles Airways ordered five twin-engined, gas turbine-powered Sikorsky S-61 helicopters, and expects to be the first carrier in the world to put such machines into service. First delivery will be in late 1960. Powered by two General Electric T58s, each delivering 1,050 shaft hp, the S-61 will carry 28 passengers, 1,200 lbs. of cargo and will have all-weather flight capability. Price, fully equipped, is about $650,000. Chicago Helicopter Airways has ordered three three-engined versions of the S-61 for early 1961 delivery (*AIRLIFT*, July).

Other Equipment Purchases

In addition to Slick, Capital and LAA, the following equipment transactions were in the news:

Swissair canceled its order for five Convair 880s and ordered seven Convair 600 Coronados. Two will be leased to SAS for four years.

KLM increased its order for DC-8 Interncontinentals from eight to 12.

Hawaiian Airlines optioned three to six DC-8s, contingent on getting routes in CAB's Pacific case.

Alitalia initialed a preliminary order for four Mark 3 Caravelles, optioned four Mark 6s.

Pakistan International Airlines bought three Fokker F-27s, optioned six more.

Frederick B. Ayer, airplane dealer, bought 15 of American Airlines' DC-6s, has option on 30 more in groups of 10, has first refusal rights on rest of DC-6 fleet.

Hughes Tool Co. failed to exercise option to buy six short-range Boeing 707s from Pan American. PAA is acquiring six long-range 707s from Hughes.

Holley Announces
A Nationwide Service Network f
of Commercial J

Service or replacement of Holley's compressor bleed governors, bleed pistons and bleed valve actuators is now immediately available throughout the U.S.

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In 14 key areas throughout the U. S., there is now a competent Holley service shop readily accessible to airlines flying the Boeing 707 or Douglas DC-8. These service outlets are fully equipped and stocked branches or main service departments of three well-known aviation parts and service distributors: Pacific Airmotive, Southwest Airmotive, and Airwork.

Each of these distributors has personnel specially trained in the servicing of Holley aircraft products and each maintains a stock of both assembled units and components of Holley compressor bleed governors and actuators. Replacement or service of these jet engine accessories is literally only minutes away from any metropolitan center.

If you would like a complete brochure of Holley products, facilities, and service outlets, simply address the Aircraft Division at Holley.

West Coast and other Western states airlines and commercial customers are serviced through the several branches of the Pacific Airmotive Corporation and its subsidiaries

The handsome new facilities of the Southwest Airmotive Corporation at Love Field, Dallas, Texas, are headquarters for Holley sales and service for Dallas and other south Texas areas.

East Coast and Southeastern sales and service are provided through the organization of the Airwork Corporation and its several branch locations.

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NEWS HIGHLIGHTS

Boeing Announces Jet Freighter

A swingtail Model 735 turbofan airfreighter, with direct operating cost of 3¢ a ton-mile domestically, was announced by Boeing Airplane Co., which claimed that this cost is lower than any turboprop freighter now offered. Powered by four Pratt & Whitney JT3Ds, the 735 will carry 100,000 lbs. of cargo across the U.S. nonstop in five hours, Boeing said. Direct operating cost internationally would be about 3 1/3¢ a ton-mile. The plane is offered for 1961 delivery.

Boeing said the 3¢ cost was based on a $6.2 million price for a small order. An order for 100 or more would put the price below $5 million, they said, adding that an order would be accepted for as little as five, and that it would not be contingent on military support.

Mutual Aid Pact Extended

The mutual aid strike pact signed in October 1958 by six airlines has been extended for another year. Members are Eastern, American, United, Captial, Pan American, TWA. Meanwhile, CAB voted 3-1 to sustain its earlier decision approving the original agreement.

USAF Selects JetStar

Lockheed's Model 329 JetStar won the Air Force's competition for a small, off-the-shelf jet transport to be used as a navigation trainer. McDonnell's 119A was the other plane in the competition. USAF hasn't yet decided whether it will buy any JetStars with fiscal 1960 funds. Final version of the 329 will be powered by four Pratt & Whitney JT-12s.

West Germany May Build Transports

West Germany is expected to decide soon whether to try to reestablish itself as a producer of commercial aircraft. Lufthansa has told the Ministry of Economics that two designs, the Hamburger Flugzeugbau HFB 314 and the Heinkel He 211, are worthy of government support. The HFB is an 80-passenger twin-jet short/medium range plane. The twin turboprop He 211 would carry 23 passengers and have STOL characteristics.

Curtiss-Wright Quits AIA

Curtiss-Wright Corp. resigned from Aerospace Industries Assn. and its subsidiary, Manufacturers Aircraft Assn., stating that these groups "can no longer serve the defense program or the defense industry as is required to meet today's competition and have a healthy industry." C-W president Roy T. Hurley, who said the resignation doesn't mean that the company is withdrawing from aviation, stated there is a "need for more individual action on the part of each manufacturer and less . . . group action." AIA president Orval Cook commented: "our members believe there are many areas . . . in which group action is necessary . . ."

New Cessna, Beech Models

New aircraft have been introduced by Cessna and Beech. Cessna showed the military a mockup of its proposed 407 four-place utility jet. Powered by four Continental 356-9 engines, the plane has cruise speed of 404 knots at 35,000 ft., gross wt. of 9,300 lbs. Cessna said the 407 could be the forerunner of an executive jet if a military sale is made.

Beech's $120,000 Model 65 Queen Air is a twin-engine six-place executive plane with 7,700 lbs. gross wt., 200 mph cruising speed. Power is two 340-hp Lycomings.

FAA to Test Helicopters

First cooperative all-weather test of helicopters under high-density traffic conditions will be started by FAA on Dec. 1. Army Sikorsky H-37s and Marine HR2Ss will run daily flights from Bridgeport, Conn., through Westchester and Idlewild to FAA's Atlantic City test center and return. A Vertol 107 twin-turbine may also be tested.

Groups Split on Airborne Radar

FAA's proposal to make installation of airborne weather radar mandatory in all T-category passenger planes has been opposed by trunk and local service airlines, but is supported by pilots, flight engineers and dispatchers. Air Transport Assn. said there isn't enough "weather" in many areas to justify continuous radar operation; storms are infrequent in still others; planes can accommodate only one set which might break down; slower planes can't adequately utilize the device. ALPA strongly supported FAA, and urged that radar also be installed in DC-3s and Lockheed 18s. FAA is studying the comments.

GM Buys Last Convairs

General Motors Corp. was the purchaser of the last six Convair 440s. These were the remaining planes in a group of 25 which Convair had assembled on speculation before shutting down production. GM will convert them to Allison 501 turboprops and add them to its business aircraft fleet. Added to two Convair 340s acquired from Hawaiian Airlines and United Air Lines, the six planes will give GM a Convair/Allison fleet of eight.

Briefs

Japan Air Lines signed $17 million loan agreement with Export-Import Bank to help finance purchase of four Douglas DC-8s.

Contracts by FAA include $343,693 to Servo Corp. of America, New Hyde Park, N.Y., for development of a Doppler VOR, and $247,951 to IBM for continuation of air traffic simulation studies designed to reduce certain types of flight delays.

Net loss of $25.7 million was reported by Douglas Aircraft on $658 million sales in first nine months of 1959. Profit in same 1958 period was $16.5 million on $888.7 million sales. This year, DC-8 development costs were $37.6 million.

Round-the-world jet service, once weekly, was started Oct. 10 by Pan American with Boeing 707s.

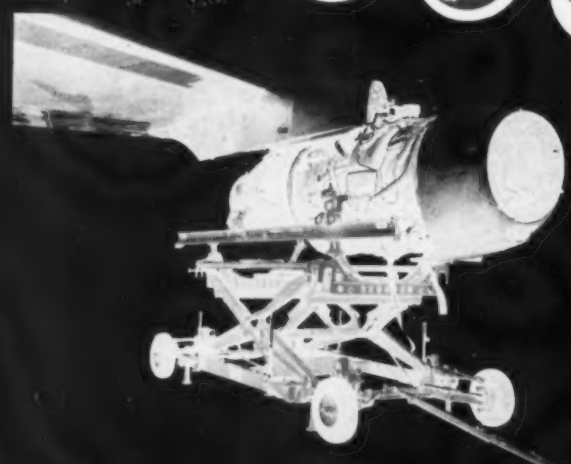
Transatlantic jet inaugural dates: Air France, Jan. 25 with Boeing 707s; Sabena, Feb. 15 with 707s; KLM, March with DC-8s.

American Airlines put DC-7F freighters into trans-continental operation Oct. 25. Plane will carry 33,500 lbs. coast to coast in eight hrs. AA predicts it will carry over 100 million ton-miles of cargo this year.

William P. Hoare retired as vp-base maintenance of United Air Lines after 32 years with the company.

George McSherry, former director of Dade County Port Authority, Miami, was named assistant general manager for planning and operations, Los Angeles Dept. of Airports.

MAJOR AIRLINES *specify* AIR LOGISTICS JET SUPPORT EQUIPMENT



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BOEING 707 and 720

Quiet Please!

Jet Noise Plagues Industry;

FAA Prepares to Take Hand in Airline-Airport Controversy

By ERIC BRAMLEY

ALL INDICATIONS ARE that the federal government will soon step into air transport's No. 1 community problem—aircraft noise.

The problem isn't new. It's existed for years, but an *AIRLIFT* survey shows that it has now been intensified in at least some sections of the country by introduction of jets. And in one section—New York—jet noise, in addition to annoying some communities, has resulted in a schism between the airport operator and the rest of the industry that will not be easily healed.

When it comes to noise, everyone is in favor of motherhood and against sin. Airports have attempted to alleviate it. So have airlines and their pilots. The very fact that so many groups have been at work, sometimes with different approaches, has caused bitterness and recriminations—particularly in New York.

QUESADA

Four years ago, the Civil Aeronautics Administration backed away from the noise problem, doubting that it had the power to do anything about it. Today, however, the Federal Aviation Aviation Agency knows that it has the power and intends to take action.

FAA Administrator E. R. Quesada told *AIRLIFT*: "The Federal Aviation Act of 1958 provides for the promulgation of regulations governing the flight of aircraft for, among other things, 'protection of persons and property on the ground.' And, he added, "the courts have generally held that aircraft takeoffs and landings are air traffic control matters falling within the jurisdiction of the federal government and its appropriate regulatory agency."

This doesn't negate the responsibilities of others who may also be concerned, Quesada says, but "it does give the Administrator authority to issue flight regulations designed to reduce the noise problem.

"Accordingly, the various bureaus and offices of this agency are currently engaged in technical and other studies as to actions we may lawfully take toward aircraft noise abatement. We are studying airports concerned and are establishing firm, positive remedial programs where needed for the use of preferential runways and adoption of traffic patterns that will provide relief to congested populous areas."

When FAA steps into the No. 1 problem, it will also assume the unenviable position as No. 1 target. All complaints and accusations will be aimed directly at it.

The most turbulent noise situation at present exists in New York. It's turbulent for a number of reasons. In a single day—1,440 minutes—there are more than 2,000 aircraft operations at Idlewild, LaGuardia and Newark. There's more noise and more people to complain about it. There are also two different plans for reducing noise at Idlewild, and these have led to bitterness.

When the Port of New York Authority granted permission to airlines to use jet equipment at Idlewild, it said they must conform to noise reduction jet takeoff procedures. These procedures include use of preferential runways, designed to keep aircraft away from nearby communities as much as possible, and specify that takeoffs must be so planned that a noise level ceiling of 112 perceived noise decibels as measured on the ground in communities under flight paths will not be exceeded. Only two runways may be used for takeoffs from 10 p.m. to 7 a.m.

TOBIN

Each month, PNYA publicizes the airlines' degree of conformance with its rules. August, for example, was 74.7%, but PNYA singled out airlines that were below the average, particularly American with 64.3%.

The other plan is that of the National Air Transport Coordinating Committee, the New York area noise group formed in 1952. Members are the airlines, ALPA, CAB, FAA, AIA, ATA and, until recently, PNYA. As long ago as December 1958, PNYA, claiming that NATCC's policy on noise was directly opposite to its own, withdrew from NATCC committees, although it remained a member.

NATCC's preferential runway plan was issued last June (PNYA claims it had no knowledge that the plan was being prepared, even though it was then a member). This system selects a preferred runway for landing or takeoff for each of the 16 wind directions and for a calm condition.

Two months ago, Adm. C. E. Rosendahl, NATCC's executive director, in testimony before subcommittees of the House Interstate and Foreign Commerce Committee, was highly critical of PNYA, asserting there would be "less confusion and there might be more results if the airport operator would not endeavor to form and enforce rules in an area logically reserved to federal jurisdiction."

PNYA said that Rosendahl, in effect, "read us out of the party," and a few days later executive director Austin J. Tobin, who has personally directed the noise campaign, sent in the agency's resignation.

What happens now? NATCC says it will continue to abide by its own rules, pointing out, incidentally, that its procedures cover approaches as well as takeoffs, while PNYA's do not. Most compaints are about approaches.

PNYA, which points out that NATCC rules do not differentiate between day and night operations and do not provide for measurement of noise levels from the ground, says its regulations remain in full force and effect. It claims it has legal power to enforce its rules and ban a non-conforming airline from Idlewild but that this would be an "extreme sanction." A PNYA spokesman described the present situation as a "cold war," and added: "We want cooperation short of enforcement; the conflict can and should be resolved short of a hot war."

Two weeks ago, PNYA suddenly ordered jet airlines to file with it flight manuals and flight plan data, the latter "reasonably in advance of each proposed jet takeoff." What will result from this remains to be seen. There was a feeling that PNYA might make an advance claim that a takeoff would violate its rules and seek to change takeoff plans.

What's the situation at other jet airports?

Los Angeles International: Since jets started on Jan. 25, there have been 750 complaints. Leading the list are protests—some 400 of them—about easterly approaches. Engine run-ups at night and easterly takeoffs are also cited.

Three steps have been taken by the Los Angeles Sound Abatement Coordinating Committee to alleviate the situation: (1) pilots were required to maintain at least glide path elevation on the approach, with due regard for safety (a recent FAA survey showed that in 1,000 landings, only 34 planes dipped below glide slope); (2) easterly takeoffs were banned between 10 p.m. and 7 a.m. unless at least 10 knots of east wind prevails; (3) ILS glide slope and precision approach radar were raised from 2¾ degrees to 3 degrees, making possible a steeper approach with a corresponding decrease in power. A runway extension from 10,000 ft. to 12,000 ft. is in progress.

San Francisco International: Complaints have increased substantially since start of jet service. A San Francisco Flight Coordinating Group has been at work for two years.

The airport has established a preferential runway system, providing for the maximum number of large aircraft to make approaches and takeoffs over the bay when conditions permit. Two runways are to be lengthened within the next few months. Efforts are being made to have jet training flights transferred to military fields.

Chicago-O'Hare International: No complaints since start of jets (48 jet operations daily in October). Airport covers 10 square miles, and runways are removed from private dwellings and congested communities.

Miami International: Quite a few complaints last winter. No reaction to TWA's new jet service which started last month. There is a preferential runway system, with takeoffs over the Everglades in less than 15 mph winds. Climbout is to 1,200 ft. at Meto power.

Baltimore-Friendship: No jet complaints from civic groups, some complaints from individuals. Airlines have been asked not to conduct jet training flights after 9 p.m.

The airlines' noise dilemma has been graphically explained by F. W. Kolk, American's director of equipment research. "We have more than spent our budget of money, of weight and of efficiency loss (for suppressors) and have obtained an airplane which is about as noisy as the conventional propeller aircraft.

"In addition . . . we have been asked to invest in anti-noise flight patterns . . . We have complied . . . insofar as prudence dictates, but we have been extremely reluctant to accept the responsibilities of extremely low climbout speeds in view of the relatively poor performance and handling characteristics of jet aircraft as they approach stalling speed."

As the airlines phase in 707s and Electras, analysis of CAB reports reveals some startling facts about the first results of their operation.

Are the Turbines Pa

HAVE THE BOEING 707 and the Electra been a competitive and financial success? Ten months have now elapsed since they ushered in the jet age as the first U.S. pure jet and turboprop aircraft, and enough traffic, operating and economic data has been filed with CAB to draw some solid and surprising conclusions.

Turning first to operations, the large jets are requiring far more time for pilot training than was first anticipated, or than is being required by the Electra. American, during the first half of 1959, reported 1,523 hrs. of jet training time, compared to only 920 hrs. on the Electras. During the second quarter, an average of 10.9 jets and 12.7 Electras were operated, and total training time to date had averaged 140 hrs. per jet contrasted to only 72.5 hrs. per Electra. On a dollars and cents basis, the Boeing flight training program has cost some $1,400,000 compared to $522,000 for the Electra, based on second quarter direct operating cost levels.

Speed-wise, both the turboprop and the jet have failed to live up to many advance expectations. Lockheed, for example, in their recent report SLR/1925, released in June of this year, showed a block speed of 332 mph at a 600 mile range, while in actual practice Eastern and American have averaged only 296 mph at this distance.

The jets have averaged less than 450 mph, block-to-block, in actual operation. These disappointing results performance-wise have been in large part due to the problems of airways and air traffic control—the inability to obtain clearances at optimum altitudes, preempted by the military, the necessity to conform to piston-engine air traffic control, and the frustration of terminal congestion.

In view of direct operating costs averaging $450 per hr. for the Electra, and $900 per block hour for the jets, failure to achieve expected performance will add millions of dollars to the airline's costs in the months to come.

Lockheed and Allison have virtually "hit the nail on the head" in regard to fuel consumption. As far back as 1956, Lockheed was estimating a consumption of 750 gal. per hr. for the Electra—a forecast which has been realized within a tolerance of 2%.

The Boeing 707, on the other hand, has felt the full impact of ATC delays and inefficient altitudes. Fuel consumption has run from 25% to 40% more per flight hour than was expected under optimum conditions. At current fuel costs, this has added $50 to $75 per flight hour.

Lockheed, in its report SLR/1925, estimates a direct operating cost of $1.32 per mile, while American's reported experience to date (excluding maintenance burden) has been $1.54. Boeing 707 costs which were forecast around $1.56 per mile under the ATA formula have so far averaged over $1.75 on American's system. Actual costs have exceeded ATA estimates despite the fact that fuel costs are computed by the formula at 14.5¢ per gal., and have actually averaged under 11¢.

Paying Off?

Costrender*

Crew costs, under the impact of wage increases and the addition of the third pilot, are almost double the ATA formula estimate. There is every indication that airline managements have estimated their turbine-powered aircraft operating costs 15% to 25% below current levels.

Naturally, it might be assumed that current experience reflects all the break-in costs, and that expenses will be sharply reduced in the near future, but past experience would not lend much comfort to this view.

Current airline reports to the CAB indicate that, with the exception of Eastern Air Lines, virtually all jet and turboprop training costs are not reflected in current operating costs, but are being capitalized. And tracing the cost history of the DC-7 and the Viscount, it is readily apparent that after the first months of operation (the "free ride" period) operating costs go no place but up.

How does the Boeing 707 measure up to present piston-engine transports cost wise? American's cost of 1.82¢ per jet seat mile is far below the 2.12¢ it reported on its DC-6Bs, and 2.89¢ on the DC-7. Likewise, TWA's second quarter cost of 2.04¢ per available seat mile on the Boeing 707 contrasts just as favorably with the 2.48¢ on the L-1049G and 2.77¢ on the L-1649 in the same period.

The other faces of the jet powered economic dice are less attractive, but fortunately have not been seen. The present jet haul is over 2,000 miles per hop, permitting operation at optimum cost. As the haul is reduced, speed will fall, and cost will rise. National, for example, reported a second quarter cost of $2.85 per mile on its 1,080 mile hop from New York to Miami, compared to American's $1.95 coast-to-coast. United, with a cost of $1.40 per mile on a DC-7 requires 24 passengers to cover direct costs, while a jet at National's cost would need almost 50.

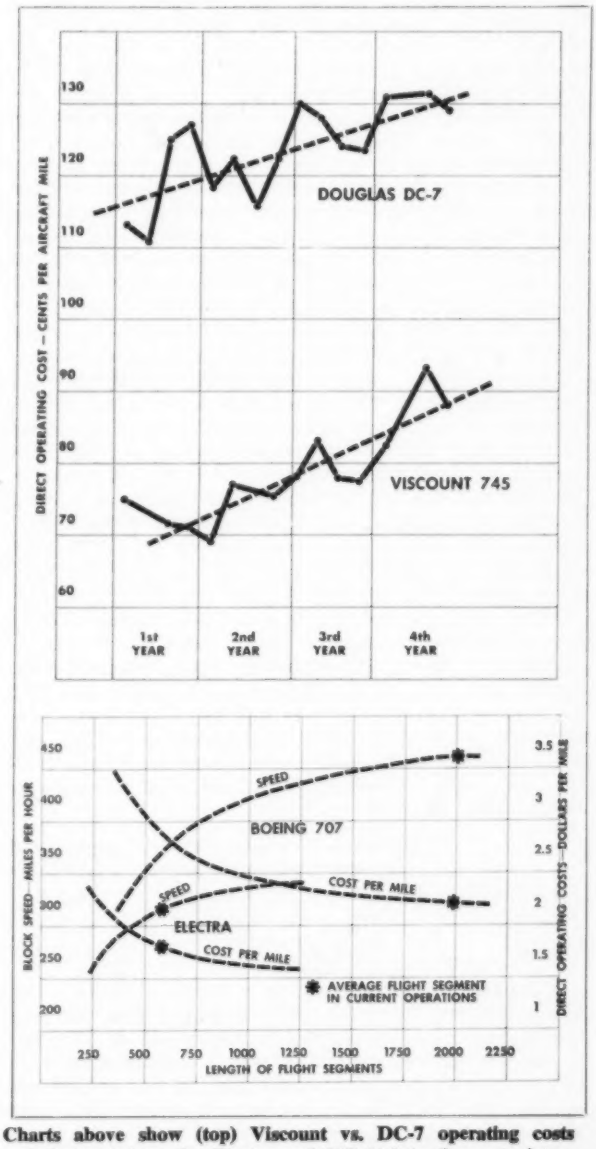
The Electra, with a reported second quarter cost of $1.46 per mile on Eastern's system, and $1.70 on American's, does not compare as favorably as had been hoped with the DC-7 and especially the DC-6B which it is slated in large measure to replace.

American	Electra	$1.70 per revenue mile
	DC-7	2.01
	DC-6B	1.29
Eastern	Electra	$1.46
	DC-7	1.45
	L-1049	1.37
United	DC-7	$1.40
	DC-6B	1.27

With the exception of Pan American, utilization of both the Boeing 707 and the Electra to date has been relatively low and has contributed, no doubt, to higher operating costs. To some degree, low utilization must be attributed to training problems, and integration into schedule.

The following table compares second quarter revenue utilization:

American	Lockheed Electra	5:01
	Boeing 707	6:01
	DC-7	7:44
	DC-6B	7:40
Eastern	Lockheed Electra	6:29
	Lockheed L-1049	8:05
	DC-7B	8:40
TWA	Boeing 707	6:09
	Lockheed L-1049G	9:02
	Lockheed L-1649	9:20
United	DC-7	9:42
	DC-6B	7:42
Pan American	Boeing 707	8:36
	DC-7C	9:42



Charts above show (top) Viscount vs. DC-7 operating costs and (bottom) how the Electra and 707 fit into the cost picture at the present time.

**AIRLIFT's contributing analysts on aircraft economics, operating trends, etc. are specialists in their field, but remain anonymous at their own request. Look for future appraisals by Costrender of current topics on operating economics.*

Higher utilization will be required in order to spread the depreciation burden. But, as utilization rises, the airlines must serve shorter haul markets, speed will fall, and the other segments of operating costs such as crew, fuel and maintenance costs will increase.

Applying current costs to expected speed curves, we get this picture:

	Flight Length	Block Speed	Approximate Cost/Mile
Electra	1,000	315	$1.43
	750	305	1.52
	500	285	1.70
	250	233	2.17
Boeing 707	2,000	440	2.00
	1,500	425	2.11
	1,000	400	2.30
	500	330	2.93

Have the Boeing 707 and the Electra been a competitive success? The 707, with its great speed and novelty, has exceeded the hopes of even its most enthusiastic backers. It has forced the withdrawal of competitive services, whether operated with piston aircraft, Viscounts or Electras. Its load factors have, to date, averaged from 80% to 95% since inception of service, its gross earnings have approached $3,000/hr. and its net profits topped $1,000/hr.

Most dramatic example of the big jet's impact is Continental Air Lines. Despite delivery of a fleet of 15 Viscount 812s, CAL's load factor in the three months prior to jet deliveries was running less than 50%, two points under the prior year, and 10 points below the industry. In June, July and August, reflecting the success of the 707 in the Chicago-Los Angeles market, Continental's system load factors reached a high of 66.5% and were as much as 17 points ahead of the prior year. And by August, seat miles were 50.8% over 1958, revenue passenger miles up 77%.

Financial results were equally gratifying. By August, CAL's pre-jet deficit had been replaced with a $2,420,000 operating profit for the year—a sharp contrast to August 1958's skimpy year-to-year $139,000 results. But preliminary data for September indicates TWA's and AA's growing jet fleets may be taking their toll of Continental's early lead in the Chicago-Los Angeles markets. While CAL's expansion continued, with seat miles up 88% for 1958 levels, load factor took a pronounced drop to 53.7%—down almost 13 points from August.

Not so dramatic, but equally impressive, has been TWA's jet-powered improvement. By June, TWA had overtaken American's long established position as the airline with the highest load factor in the industry. And TWA's new lead has been held to date, load factors averaging as much as 10 points ahead of 1958. Noteworthy too is the fact that TWA has recorded a considerable expansion. August 1959 seat miles were 9.7% ahead of last year, and revenue passenger miles up 21%.

	Change Seat Miles	August 1959 vs. August 1958 Passenger Miles	Load Factor
TWA	+ 9.7%	+21.1%	**+7.4%**
American	+10.9	+20.2	+5.8
United	—10.8	— 3.3	+5.7

TWA's economic improvement in 1959 has been the talk of the industry. Operating profit through August this year totaled $19,002,000 contrasted to 1958's loss of $870,000 in the same period. Again, however, a cautious note is indicated. While costs per seat mile for the year to date are up less than 4%, for the last several months they have risen more than 11% over last year's levels.

In international operation, Pan American's 707s have made a significant contribution to the company's results. Second quarter direct costs of 2.16¢ per seat mile, and 2.37¢ per revenue passenger mile contrast quite favorably with expenses of 3.15¢ per seat mile, and 5.04¢ per passenger mile on the Atlantic Division's DC-7C aircraft. The jet's 91.3% load factor compares with only 62.4% on the piston-powered DC-7C.

The Lockheed Electra's competitive picture is less reassuring. Eastern is the major Electra operator, with virtually all of its fleet of 40 now in operation. Average fleet during the second quarter was 27.2 aircraft, operating over virtually every route of the company. Reported Electra load factor in this period was 54.6%—little better than the 53.9% reported for its DC-7Bs. Contrasted with Delta, Eastern's results have been disappointing. The company has expanded less than Delta, made less money than last year and experienced a lower load factor. And its costs have risen more rapidly than Delta's.

Here is the record for the first eight months of 1959 compared to the same period of last year:

1959 vs. 1958	**Delta**	**Eastern**
Revenue Passenger Miles	+14.3%	+ 2.1%
Available Seat Miles	+11.0	+ 5.5
Passenger Load Factor—1958	56.2%	53.8%
—1959	57.7	52.1%
Change	**+ 1.5**	**— 1.7**
Operating Expense—1959 vs. 1958	+ 15.8%	+ 9.2%
Revenue	+ 19.4%	+ 6.8%
Profit	+109.2%	−22.3%
Percent of Profit—1959	6.4%	5.6%

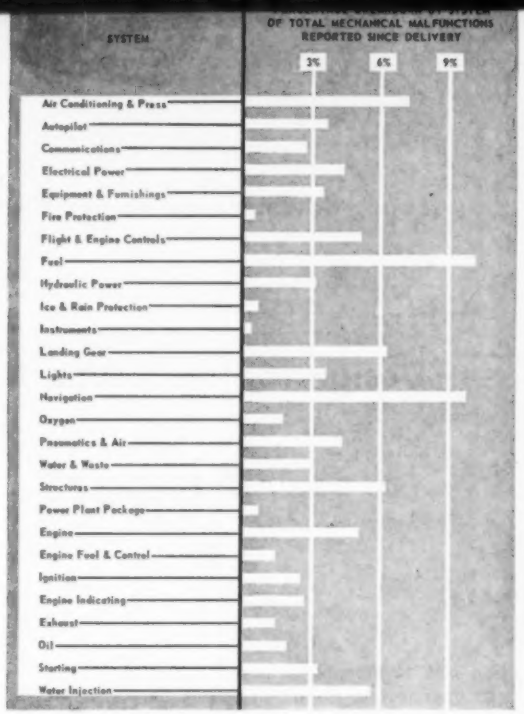
Similarly, Capital, Northeast and National—Eastern's other major competitors—have shown improvement in passenger miles and load factor compared to Eastern. This year to date Northeast, with 15 new Viscounts, has shown a 24.4% increase in seat miles, and passenger miles have jumped 39.3% to boost load factors from last year's levels of 45.4% to 51.6%. By June 1959, National, with its leased jets, has recorded a six months operating profit of $3,471,000 compared to the previous year's $1,738,000. Following the introduction of the Electra in June, however, losses have been greater than last year, totaling $1,105,000 in July and August, compared to $347,000 in the same months of 1958.

Which Jet is the Biggest

Boeing Airplane Co. has challenged certain dimensional and capacity figures (*AIRLIFT*, October) comparing models of the 707 with the DC-8 . . . and rightly so. Although the material in question was extracted from Boeing data, it failed to reflect the final adjustments, particularly in the 707-320 series, that makes its airplane the "biggest" of the jets. To set the record straight, here's how the three "big jets" compare:

	707-102	DC-8	707-320
Wing Span	130' 10"	142' 4.5"	142' 5"
Wing area (sq. ft.)	2,433	2,758.2	2,891.7
Overall Length	144' 6"	150' 6"	152' 11"
Fuselage Length	138' 10"	146' 3.5"	145' 6"
Passenger Cabin Length	104' 10"	104' 00"	111' 6"
Max. Fuselage Width	12' 4"	12' 3"	12' 4"
Internal Cabin Height	7' 6.9"	7' 3"	7' 8.9"
Internal Cabin Width	11' 7"	11' 6½"	11' 7"
Cabin Floor Area (sq. ft.) ..	1,092.69	1,080	1,153.78
Cabin Volume (cu. ft.)	7,652.56	9,171	8,130.71
Cargo Volume	1,590	1,390	1,700
Max. Cabin Pressurization Differential	8.6 psi	8.77 psi	8.6 psi
Cubic Ft. Per Min. Airflow to Cabin	3,200	3,130	3,200
Refrigeration Capacity	30 Tons	26 Tons	30 Tons
Fwd. Passenger Entry	34 x 72"	34½ x 72"	34 x 72"

707 Survey Shows Big Training Need



LOS ANGELES—Training, training and more training—this was the obvious lesson to be learned as the first U.S. jet builder—Boeing—and its first domestic operator—American Airlines—opened their books of 707 experience here for the benefit of all transport aviation.

Addressing the Society of Automotive Engineers, Boeing's service manager R. M. Morgan and AA's director of equipment research, Frank W. Kolk, combined to present two of the most informative jet technical reports on record.

In capsule form, here is Morgan's report on the 707. Experience: 51,000 flight hours and more than 2.5 billion passenger miles in little more than a year. Design: no big problems, but a number of smaller ones confined to such systems as air conditioning and water injection (see table).

But a rundown by Morgan of the major incidents in 707 operation by carriers, most occurring in training operations, carried a tacit but strong advocation of the importance of crew indoctrination on all jets. Some examples:

The well-publicized unattended PAA 707 descent that graduated into a high-speed spiral dive and 5 to 6g pullout. Seven instances of pod scrapings during training, with crosswind contributing in two. Two stalls during two engine out simulation, one resulting in the loss of an engine.

Landing undershoots: one in scheduled service, the other in training. One tail down landing. A hard landing in Chicago with successive bounces of 1,300 and 1,100 ft.

American's Kolk said positive traffic control and airways congestion has increased the nonstop transcontinental range requirement by some 20% over "Great Circle" routing; this combined with suppressor losses and over-optimism on performance posed a threat to nonstop, full-payload operation at the start of 707 service.

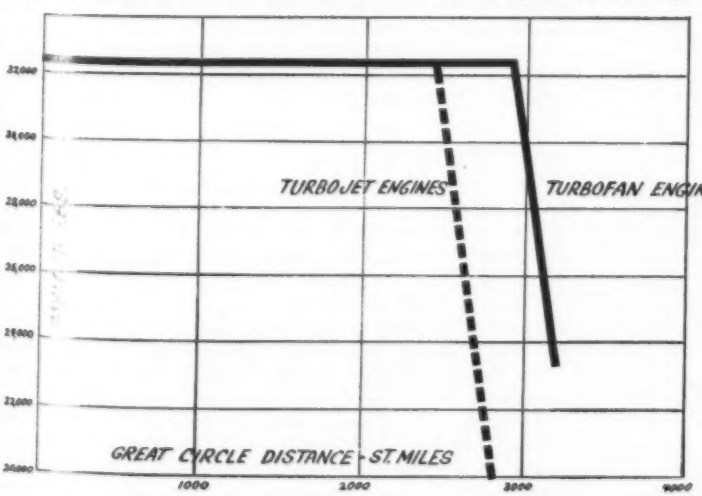
Here's how he pinpoints the problems raised by jets: Landing distances: practical runway needs are some 15 to 20% in excess of certificated values due to higher approach speeds used and relatively ineffective reversers.

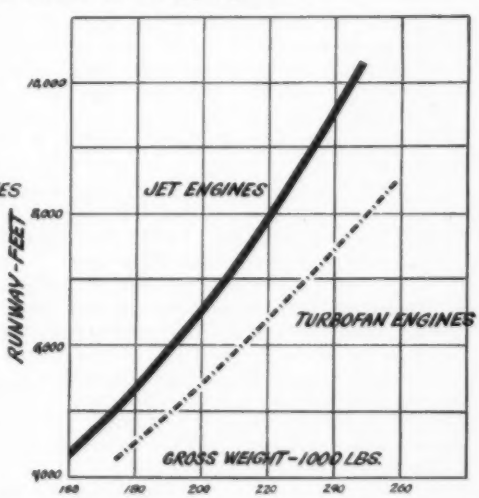
Takeoff: AA has found it necessary to build in a three-knot tailwind component in its entire jet operation to offset the effects of crosswinds and atmospheric turbulence or gustiness at takeoff. This practice provides some 300 ft. available for accelerate-stop maneuvers and about 40 ft. additional end-of-the-pavement height in the all-engine takeoff condition. Kolk said a good bit of this built-in margin is used up in day-to-day operation.

Major alleviation of these problems, adds Kolk, lies in better miles per pound through lower specific fuel consumption, shorter landing distances via lower stall speeds and better takeoff characteristics via more thrust.

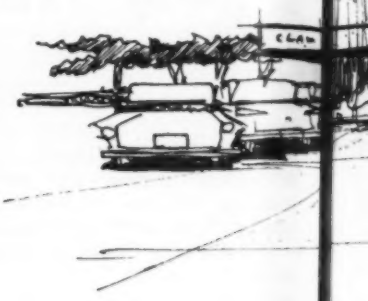
American's planning in this direction embraces this three-prong modification starting next fall: (1) retrofit a wing leading edge "glove" to improve high-speed capability; (2) additional leading edge flaps to enhance low-speed performance; and, (3) the turbofan engine for more power and better specifics.

How the turbofan will enhance the American jet's range (left) and improve AA's 707 runway lengths.





Long, flowing lines of ticketing building reflect futuristic approach which characterized design of entire airport.

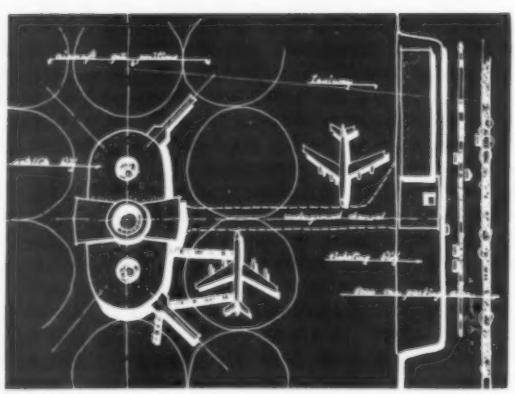


Design for the future, that's L.A.'s planned

Airport Spectacular

By CHARLES LUCKMAN

President, Charles Luckman Associates



IF SOMEONE ASKED us to design an earth base for interplanetary passenger travel today, we would consider the challenge insurmountable.

But such a futuristic request would startle us no more than one handed us six years ago: to plan a commercial jet age airport that would still be up-to-date when it opened for business a few years later.

This was an unprecedented assignment. No airport had ever been designed from the ground up for jets. Nor, for that matter, had aircraft manufacturers built a commercial jet liner!

But the big jets *are* here now. Fortunately, some farsighted U.S. community leaders and aircraft manufacturers foresaw the trend and began to prepare for it.

When requirements for commercially-operated jets were disclosed, we at Charles Luckman Associates already had experience in planning military jet airports. We had master planned the conversion of Edwards AFB (Calif.) to the world's most modern flight test center and had under way plans for conversion of other bases at Luke, Williams and Nellis in the southwest.

Overseas, we were handling the master planning program for SAC's $350 million Spanish project.

Now we needed to learn how commercial airlines, aircraft manufacturers and the CAA (now FAA) were planning to handle jet age operations, and we needed the close cooperation and guidance of our client, the Los Angeles Airport Commission and its Department of Airports.

Without the careful planning and foresightedness of Los Angeles government officials, we would have found ourselves trying to squeeze 650 mph jets into a facility not properly geared for them.

It's no secret that many of the nation's finest passenger airports—including Los Angeles International—are obsolescent because of new dimensions in air travel. The problems are many. For the jets: longer runways, careful attention to noise abatement, unobstructed terminal gate areas, and the need for swift ground movement and handling to avoid costly delays. For the passenger: easy access from parking to ticketing, fast baggage processing and handling, convenient enplaning and deplaning, and pleasant dining facilities. These are just a few.

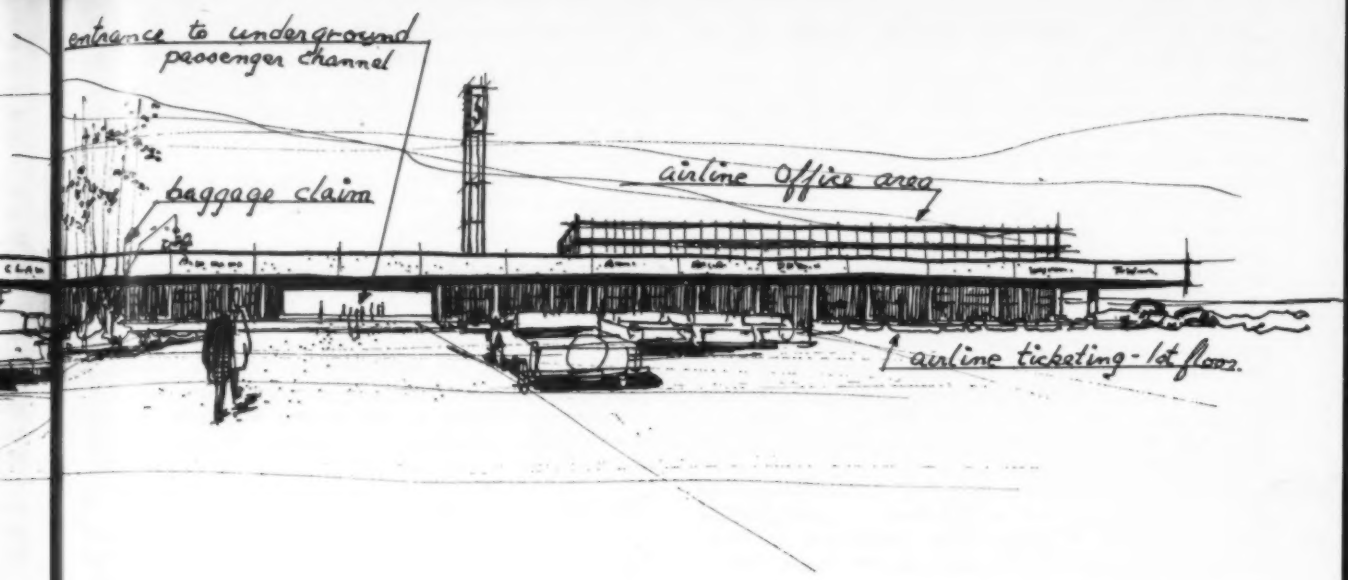
L.A. jumps the gun

The problems are obvious today, but in 1953 they were paper problems, theoretical at best. While other major urban regions decided to wait for the jet age to come and "see what happens," Los Angeles started long-range planning to get the jump on jet air travel.

City engineers had spent years planning with the cooperation of outside engineering groups. Los Angeles is the heart of the nation's aircraft industry, and farsighted plane builders harped on the need for adequate airport facilities.

In 1953 Charles Luckman Associates, successor to Pereira and Luckman, won a commission to evaluate and bring up to date the results of this careful planning. We were to blend it into a master plan, to include not only the

Drawings by the author



proper use of available land, but new terminal building requirements as well.

With no civilian jet airport as a model, we sought other ways of finding what commercial jet airplane requirements and problems would be.

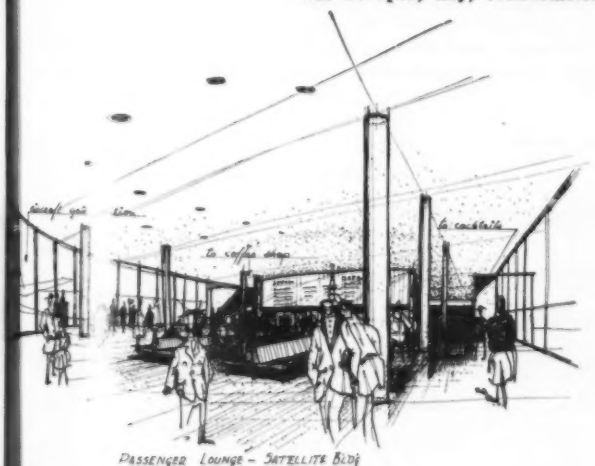
Turning to the plane builders, we asked how their new jets would operate, what runway lengths would be required under all operational conditions, what pavement design load factors would be encountered, how ground handling and servicing techniques probably would develop.

We asked CAA what to expect in new air and ground traffic control techniques and equipment and ground handling. Most important, we wanted to know what passenger handling problems to expect.

Predicted passenger statistics at Los Angeles International were staggering: in 1953, 2,500,000 people passed through its portals. We could expect this to jump to nearly 4 million by 1956, to 5 million by 1960, to 9 million by 1965 and 13 million in 1970. Our plan had to accommodate more than 10 times the present high density airport traffic with dispatch, safety and comfort.

While somewhat revolutionary and unique, our approach appeared logical and sound. We feel that we conceived the ultimate in simplicity—a dual-level satellite concept that will solve bottlenecks in aircraft movement and handling; that will give passengers minimum travel from cars to aircraft; and that will meet standards of esthetics, function, efficiency and design in an unusual way.

Satellite building passenger lounge will be open, airy, comfortable.



PASSENGER LOUNGE – SATELLITE BLDG

We kept reminding ourselves that, like many another metropolis, Los Angeles is a city on wheels. While a helicopter shuttle links International airport with suburban areas, and there are buses and taxis, most air travelers drive to and from the airport in the family car. A high-capacity parking lot had to be the hub of terminal design, surrounded by various airline and public facilities.

Our next problem was to fuse expanding numbers of cars with an expanding fleet of jet planes. In approaching these problems, we conceived the dual-level airport as the most workable solution, with the terminal area one story below airfield level.

A problem of timing

Once we decided to go underground to meet the jet age, integration became a problem of timing. Too often we had heard that it takes as long to travel cross-town, struggle through terminal jams and board a plane as it does to fly from city to city.

Airline operators convinced us that for economy and efficiency, passenger facilities had to match the shortened turnaround time for jet aircraft.

Adoption of the "dual-level" concept seemed to provide the only practical way to achieve harmony. We had to provide departure rooms, lounges, rest rooms, food and bar concessions, newsstands, gift stands and phone booths. We also had to provide functional facilities for the airline crews, service elements and other operational functions of a major air terminal.

At ground level (normal field level) we put individual airline satellite buildings where incoming and departing jets could move in and out without obstruction.

One story below ground we put the entire terminal area, with individual ticketing buildings around the periphery of a centrally located 5,000 car parking lot. Traffic density and time-motion studies indicated that the idea would accommodate any expected airline traffic expansion.

By using two levels, free and separate access to the satellites would be possible without impeding the newly-conceived 360-deg. accessibility of the jets at all gate positions. The dual-level satellite concept thus decentralized a complex traffic flow into manageable and orderly units,

and provided maximum gate positions without aircraft traffic flexibility sacrifice.

The Board of Airport Commissioners in 1953 saw the need for careful future planning, but voters that year turned down a $33.5 million bond issue. The Board knew public interest would best be served by an energetic approach to jet age problems, however, and gave the firms of Charles Luckman Associates, Welton Becket and Associates and Paul R. Williams the task of preparing plans, designs and models for the proposed new terminal. CLA was named coordinator, and I became chairman of the policy board.

The master plan was completed in December, 1955. All participating groups had settled on budgets and financial plans by that time and the following June Los Angeles voters had before them what we felt was an exciting new jet age airport plan. They overwhelmingly accepted it 6 to 1. A $59.7 million bond issue included $49,655,000 for airport improvement.

The master plan developed in 1953 had established the project's general airport configuration. It prescribed an east-west runway of offset double strips plus a shorter north-south runway with a terminal area to be located between them.

Originally called Mines Field, the location selected was a fortunate one which provided a westerly takeoff climb across uninhabited sand dunes into a clear climbout traffic pattern extending roughly to Santa Catalina. With the predominant landing approach pattern from the east, incoming jets could descend under reduced power, lessening the noise problem.

With FAA providing all-weather surveillance and approach radar control, the runway complex was designed for a maximum traffic saturation of 240 hourly movements with installation of advanced electronics aids.

Two runways, a mile apart

We decided on two separate runway systems, separated by one mile. The one control tower can monitor simultaneous landings and takeoffs with maximum safety, at a rate of one every two minutes, 120 an hour on four strips.

Los Angeles International offers pilots up-to-date landing and ground navigation aids. In addition, the offset runway arrangement reduces taxi time and improves traffic flow. Jet pilots will be able to land without fear of another ship taking off beneath them. They can complete a short deceleration roll and turn off at 50 knots to a broad, curved ramp, guided by low-glare lights to a unique satellite apron adjacent to an unobstructed central parking complex.

For night movement, we devised a new ramp illumination that offers low glare, shadowless light to improve efficiency and safety.

An unexpected bonus developed when we investigated federal airport standards for runway design. We found our design to exceed demands of the biggest jet transports envisioned by manufacturers.

Government specs called for pavement design to withstand an equivalent single wheel load of 100,000 pounds. But current and future jet transports would require no more than 60,000 pounds. We laid the matter before the Department of Airports and FAA.

After a thorough study of jet landing gear configurations, FAA agreed with our findings. The result: a saving of $1,340,000 in new runway, taxiway and apron construction costs.

We sought further economy in design criteria for paved runway shoulders, which were 25 feet wide. If we could use standard highway paving equipment, the job would be quicker and less expensive. The idea was approved. By chopping a single foot off 62,700 feet of paving, we saved $25,000 and considerable contractor time.

Providing for jets on the ground was only half the planning. The remainder was getting the passengers to and from the transports.

Travelers go underground

Under our plan air travelers will drive into a central parking area, 14 feet below the level of the parking aprons. They will move through underground access channels into the lower level of the satellite structures. Boarding escalators, they will rise two levels to the public lounge and departure area, which is raised 13 feet above the apron level to be on a par with jet cabin level.

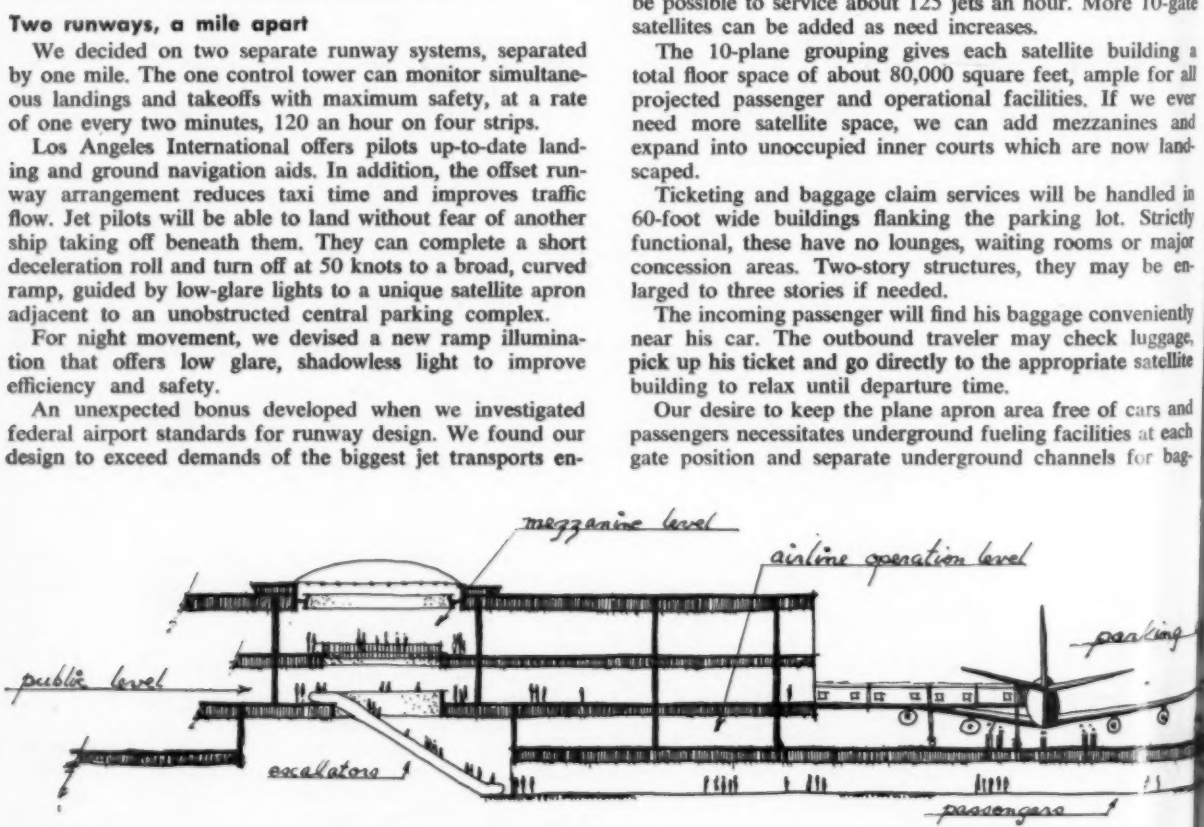
After study, we decided on six satellites, each with parking space for 10 big jets. Facility No. 7 is a small rectangular apron east of the south ramp, providing four extra positions. This makes a total of 64 gates. Assuming 30-minute occupancy, five satellites can handle 20 planes an hour each. A sixth, the International, can take from 10 to 20 planes, and the rectangular apron, 8 planes an hour. It will be possible to service about 125 jets an hour. More 10-gate satellites can be added as need increases.

The 10-plane grouping gives each satellite building a total floor space of about 80,000 square feet, ample for all projected passenger and operational facilities. If we ever need more satellite space, we can add mezzanines and expand into unoccupied inner courts which are now landscaped.

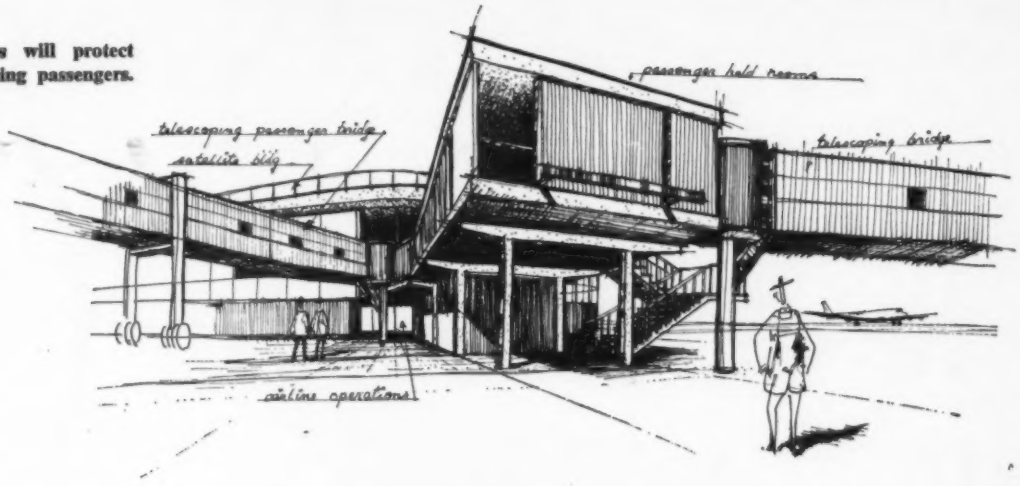
Ticketing and baggage claim services will be handled in 60-foot wide buildings flanking the parking lot. Strictly functional, these have no lounges, waiting rooms or major concession areas. Two-story structures, they may be enlarged to three stories if needed.

The incoming passenger will find his baggage conveniently near his car. The outbound traveler may check luggage, pick up his ticket and go directly to the appropriate satellite building to relax until departure time.

Our desire to keep the plane apron area free of cars and passengers necessitates underground fueling facilities at each gate position and separate underground channels for bag-



Telescoping bridges will protect arriving and departing passengers.



gage movement between satellite and ticketing buildings. Variations will be left to each tenant airline.

Our job was to provide for baggage channels which would accommodate automatic high-speed conveyor systems with electronic sorting and handling devices, or less sophisticated systems not precluding the conventional baggage car train, all within the same type of underground channel.

While baggage is flowing through the subterranean passageway, the passenger will wait in a comfortable, well appointed public lounge area roughly equivalent to the size of two football fields. He may sip cocktails, grab a quick snack or dine leisurely.

Passenger service personnel will be on hand to answer questions and give directions. Nothing will be spared for passenger comfort and service.

Mobile bridge will meet jets

At plane time, passengers can move conveniently to the proper gate on the periphery of the oval shaped satellite building, where a mobile bridge will roll smoothly out to the door of the cabin. When the bridge retracts, the jet can move to one of the two main takeoff strips. There will be no holding for incoming traffic since separate runways a mile away will be provided for landing.

For "Sunday fliers" who like to visit the airport, our plans call for a dramatic "theme" structure of delicate flying buttresses supporting a high level restaurant and bar, with an observation deck above (see cover). There will be a central commissary kitchen, an employe cafeteria and other income-producing services to help make the airport self-supporting. These will include a barber shop, beauty parlor, post office, bank, valet, rest rooms and dressing rooms, and a nursery for children.

The center complex also will include a central utility plant for hot and cold water, police and medical facilities, maintenance crew offices, power plants, vaults and communications units.

Radiant temperature control

We will provide radiant floor panel heating and cooling with perimeter reheating and recooling systems.

Overlooking the jet age airport will be a 12-story tower, with its FAA control tower, housing radar and communications gear. Below it will be the Department of Airports offices in a raised, one-level element surrounding the tower which will stand as a giant monolith to mark the main entrance.

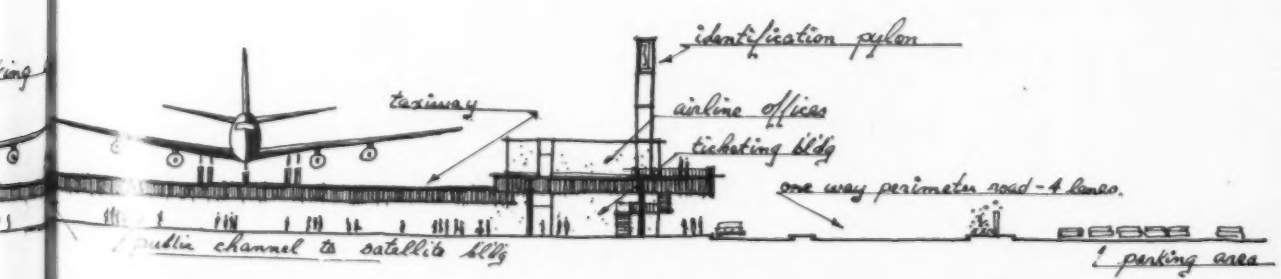
Other aspects of the master plan include a circulating internal transportation system to accommodate interline transfers and special facilities for international travelers. Passengers will move smoothly by escalator and high-speed elevators from U.S. Customs to Public Health, Immigration and other processing areas.

Future planning envisions development of the existing terminal area as an air cargo terminal, additional maintenance development and possible extension of takeoff runways to 14,000 feet if newer sky giants require them.

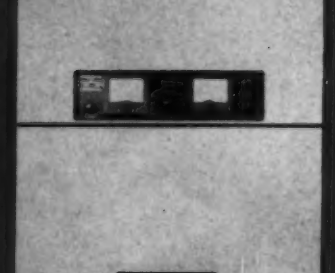
We have consistently enjoyed the fullest cooperation of all agencies concerned with the airport development project. In all matters our planning has been determined by one yardstick: passenger convenience.

I am certain that after completion in early 1961, the result of our coordinated planning will be an air terminal superior functionally and economically, and uniquely designed to meet the jet needs of both today and tomorrow.

Cross section drawing shows satellite building (left) and ticketing building, with underground passageways.



ARINC SERVES AIR TRANSPORT ROUTES WITH COLLINS VHF SYSTEMS



A vast expansion of ARINC and coast-to-coast VHF communicat rks as network is now providing ground- d alon air service for jet fleets and other Collin transports flying a variety of tra ter is continental, border-to-border and int mmunic mediate stop routes across the nati ended

Selected by ARINC to meet spec power operational and reliability requirem stant c of the extended system were Coll ns in 242F-5CL Transmitters and 51M jor fun Receivers. Most of the stations on uated network are unattended. Operati troled control is effected with ARINC- el, tran signed remote control systems. tage n

Minor modification of exist tered. Collins systems shortened deve lopm on lim

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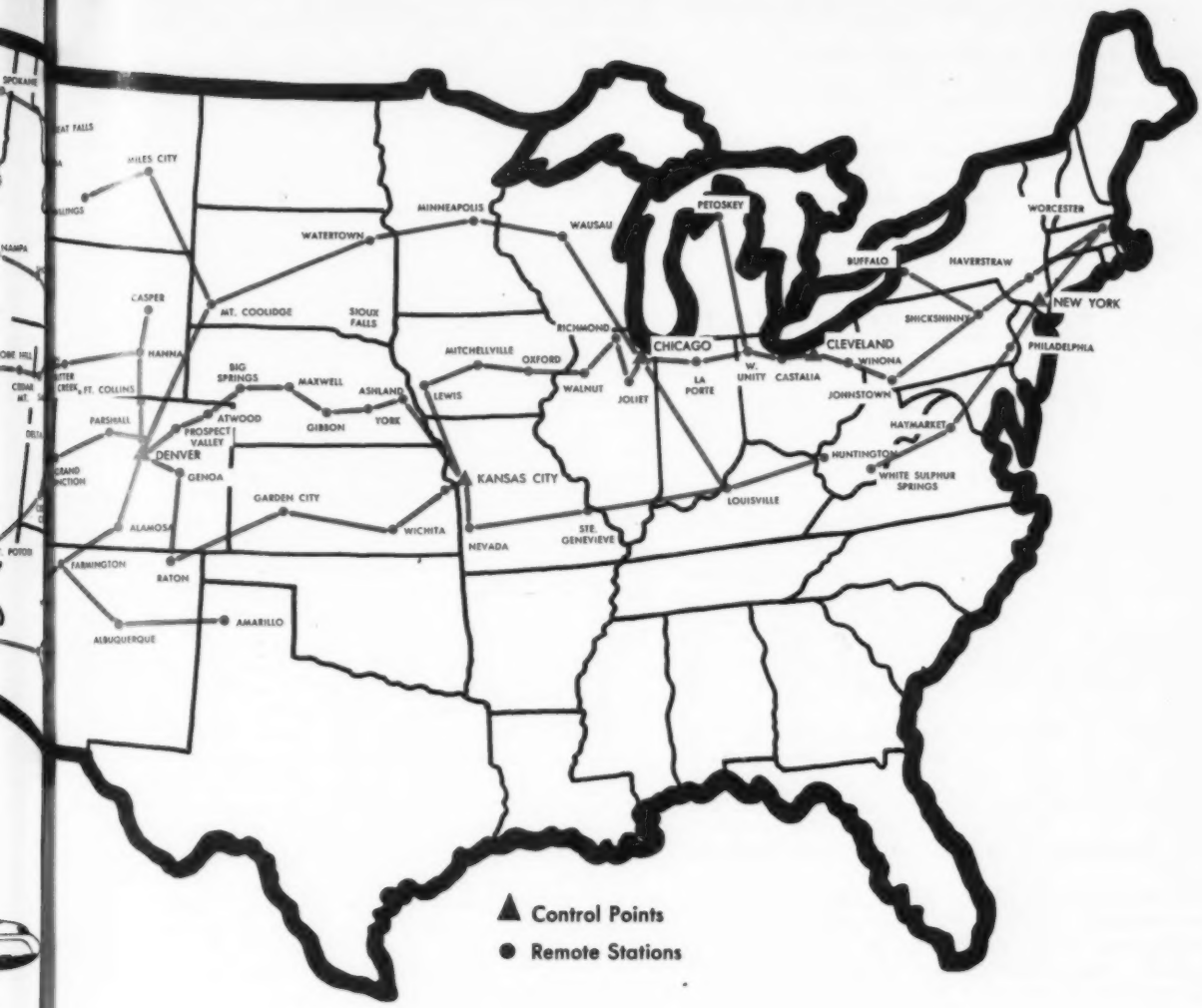

RINC e and allowed completion of the net-
nicati rks as jet service was being inaugur-
ound- d along the routes.

ther a Collins 242F-5CL VHF Trans-
tra ter is designed for use in network
d inte mmunicati n systems involving un-
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speci power utput maintains a nearly
reme stant ca rier level with normal varia-
Colli ns in pri ary source voltage. All
51M jor funct ns, including VOX (voice
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exist tered. T compressor type modu-
opme on limi has an extremely fast attack time and holds modulation rise in audio input level. An ARINC-designed high stability oscillator, used in conjunction with the 242F-5CL, enables the aircraft to be in continuous station-to-station communication over entire segments of the network without retuning the aircraft receiver.

The associated 51M-8 Receiver employs high selectivity in the RF circuits to reduce cross modulation effects to a very low level and prevent signal blocking in terminal areas where channel frequencies are closely spaced. For information and literature on the 242F-5CL and 51M-8, write Collins Radio Company, Cedar Rapids, Iowa.

COLLINS

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In order to expand air travel today, the airlines are forced to look for new passengers. Speed and convenience alone, once a strong passenger lure, are a boon to the present body of air travelers, but jet time reductions do not affect those millions who for one reason or another do not fly.

Case for Low Fares . . . the Vanguard

BY C. HAMSHAW THOMAS
Senior Development Engineer, Vickers-Armstrongs

IF THE RISE IN AIR TRAVEL is to continue, the airlines must compete more effectively with bus lines and the private automobile. Speed alone will not achieve this but price reductions may.

The reaction of different passenger markets to fare cuts obviously must vary. But it is interesting to see how low fares have boosted traffic and increased revenue. Back in 1952-53 when tourist rates were established, it became a working rule that traffic tended to increase by twice the fare drop percentage. This relationship is still generally valid.

Recent examples of this are North Atlantic economy fares and domestic British routes where excursion rates at surface transport levels have boosted traffic 50%.

On North American routes the evidence is harder to analyze. Disregarding low fare supplemental carriers, many major markets now enjoy special low fare rates from trunks. Figures for isolated routes (such as New York to San Juan and Miami) are difficult to obtain, but Walter Sternberg's comments on the effect of a surface rate air fare for midweek N.Y.-Florida night coach travel (*AIRLIFT*, June) mentioned a doubling of traffic without apparent sacrifice of other classes.

The sudden increase in Australian air traffic in 1959 from an annual 5% to 14% is largely attributed to greater low fare operation by Ansett ANA. Reduced fares, therefore, can be practically as well as theoretically assumed to increase traffic.

Profit in such service is based on market elasticity. If the market permits fare reductions to boost traffic rapidly and yield a greater total revenue, lower fares obviously are good for the operator. This happened in Europe, but U.S. carriers had much slower traffic growth when coach fares were introduced.

Assuming the operator wants lower fares, how to get them is the question. Three ways exist: to operate with low overheads; to use old aircraft having low standing charges; or to purchase aircraft designed for more economical operation with higher standing charges.

The first solution is impossible for major operators with large engineering, station and administrative commitments. And the use of old, less expensive aircraft may prove *more* expensive due to increased engineering costs, less reliability and so on. Comparison of the estimated relative costs of an old DC-6B with a Vanguard is included in table 1, based on practical cost data.

The third solution—the choice of a new aircraft capable of low direct operating costs—requires an aircraft of just the right size, which features low initial cost and high payload and which has a powerplant capable of producing power at a very low cost per horsepower. The aircraft speed, for usual reasons, needs to be as high as compatible with the chosen powerplant.

Since most low fare travelers will fly comparatively short distances (average trip length is well under 1,000 miles), no feature which would extend payload range at the expense of simplicity or ruggedness should be allowed.

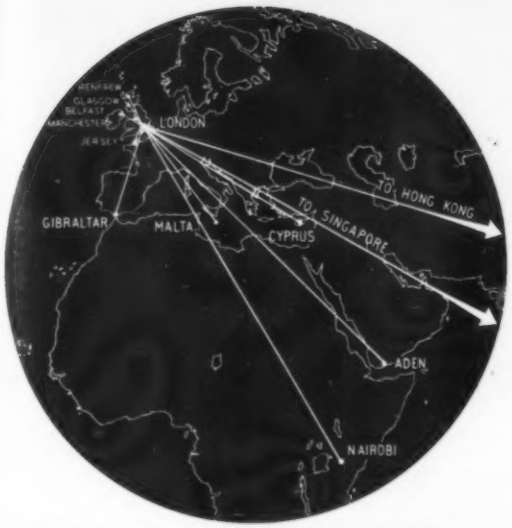
Among aircraft under design or construction to meet these requirements is the Vickers Vanguard providing, in a high density configuration, up to 139 passenger seats. The Vanguard has shown itself to have lower seat mile costs than competing aircraft in analysis by manufacturers and operators.

The aircraft has, on the basis of the ATA formulas and allowing for U.S. import duty, a plane mile cost of 200¢ at 200 miles (1.44¢ per seat mile, fig. 1). It falls to about 135¢ at 1,500 miles. The figure of 1¢/seat mile is, on these figures, met at all stages over 900 miles.

In terms of revenue, assuming full airline indirect costs at 100% of directs, 90 passengers at only 4¢/seat mile meet the costs at 200 miles falling to 65 at 1,500 miles. This latter figure is only a 47% load factor and the revenue rate assumed is some 20-25% lower than standard domestic coach rates. The Vanguard also has (fig. 2) the ability to operate profitably on a freight cum passenger basis with as few as 40 passengers.

The Vanguard has a very high speed efficiency (achieved

The turboprop Vanguard lands after a test flight.



Some of the domestic and cabotage Commonwealth routes on which BEA plans to operate low fares with the Vanguard.

block speed ÷ advertised cruise speed, fig. 3). This means that even on short sectors the ability of the aircraft to climb and descend at high forward speed, plus its ability to cruise without speed penalty at virtually any altitude, give high block speeds. These economics approximate the long range case and promise high shorthaul productivity.

The Rolls-Royce Tyne engine promises to deliver power at less per horsepower than any other turboprop engine examined, even less than pure jets at 600 mph. This parameter represents operating cost, depreciation, insurance and overhaul costs as well as fuel costs.

At 425 mph the turboprop, with a de Havilland propeller, achieves excellent efficiency and permits the aircraft to cruise without serious compressibility drag rise. Thus the engine is giving cheap power which is efficiently converted without waste. The figures in table 2 indicate the Tyne's efficiency.

The Vanguard has a capacious fuselage, parallel in section for all but two rows and without any irremovable obstructions. With 128" width inside, great space flexibility exists and 139 seats can be fitted, six abreast and at 34" pitch. Reaction to the seats installed in our mockup has been favorable.

Attention to ease of maintenance and general engineering ruggedness and simplicity is expected to lead to low maintenance and overhaul costs, while efforts to make ramp servicing quick and simple should result in lower transit and turnaround times, higher utilizations and lower costs.

Cost estimates can also change due to ATC restrictions. These may be either speed or altitude restrictions or increased distance in special corridors, approach patterns, etc. The Vanguard avoids these as it proves to operate effectively in standard piston/turboprop patterns and poses no great speed problems. It also can operate at any cruise altitude on most sectors without significant added cost.

While costs will rise due to routine holding, runway delays and so on, the penalty is small. Holding costs for a 7 minute delay would be offset by flight planning 10,000 feet lower than the optimum 20,000 feet cruise altitude on a 750 mile sector.

On the basis of the Viscount's record, Vickers personnel are confident the estimates are conservative. Admittedly, the Viscount does not always follow formulas, but it has shown that a turboprop can achieve (or exceed) estimated speeds and improve on its forecast fuel consumption, oil consumption and engine maintenance and overhaul costs despite increased airframe costs, traffic delays, etc.

Against applications for lower fares, such as the National 3.2¢ per mile bid, the Vanguard is well suited. On the New York-Miami distance at this fare, the break even load would be little above 60% with full overhead allocation on a round-the-clock operation.

Table 1: 750 Mile Stage Cost Comparison, New Vanguard & Secondhand DC-6B

	Old DC-6B	New Vanguard
Purchase Prices	$400,000	$2,800,000
Depreciation period	5 years	7 years
No. of seats	102	139
	¢ mile	¢ mile
Flying Operations	59.60	65.5
Maintenance	37.1	34.1
Depreciation	13.4	49.4
Plane mile cost ¢	110.1	149.0
Seat mile cost ¢	1.08	1.07

DC-6B Maintenance figure assumed 20% above 1958 industry mean owing to higher replacement and unserviceability rate of ageing airframe and engines.

Table 2: Tyne vs. Compound Engine

	Rolls Royce Tyne R. Ty 11 rating	Wright Turbo Compound R .3350 EA 1
Engine take off power	5325 tehp	3400 tehp
Engine bare weight	2220 lb	3675 lb
Specific weight	0.417 lb/ehp	1.08 lb/hp
Specific fuel consumption at representative level	0.388 lb/ehp/hr	0.38 lb/hp/hr

Fig. 1

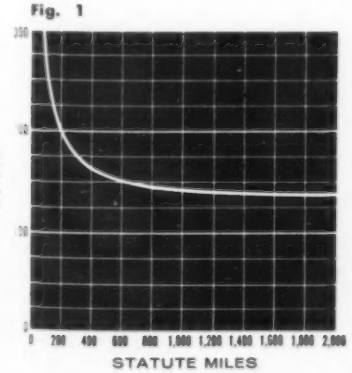


Fig. 2

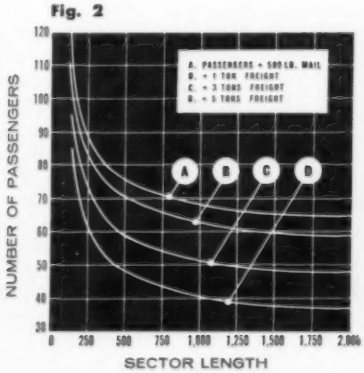
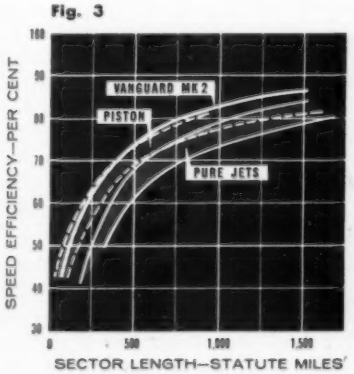


Fig. 3



Trucks vary from small Volkswagens to big semi-trailers.

Air Freight Bottleneck: the Ground

By A. J. ROPER
President
Mercury Air Freight, Inc.

SINCE ITS INCEPTION, air freight has been geared to "next day delivery," but, with the arrival of the jet, these patterns of handling freight on the ground must be altered in keeping with the pace in the air.

Practices which serve very well today will be obsolete within a very short time. With the improved movement in the air, delays which occur on the ground today without hampering the delivery schedule, will be intolerable tomorrow.

Today the great percentage of air freight moves at night and arrives at its destination in the early hours of the morning. It is no problem now to have a shipment arrive at 2 a. m. and not be delivered to the consignee until 9 a. m. True, there is a seven-hour time lapse from arrival until delivery, but, since the consignee's doors are not opened until perhaps 8 a. m. or later, this cannot be considered a delay.

But what will happen when shipments arrive constantly throughout the day? The same seven hours on the ground at point of destination now become a "lost" day, perhaps even two or three times as long as it took for the shipment to fly thousands of miles!

With the coming of the jets, the public will be rightfully expecting "same day delivery" and even "same morning delivery" and it is up to the ground phase of the air freight industry to meet their demands.

Corners must be cut, bottlenecks eliminated, delays shortened and routine operations made more efficient.

What can be done to speed up movement on the ground? We could:

- 1) Shorten the time between the actual call from the shipper and the arrival of the pickup truck.
- 2) Make more frequent trips to and from the airport via the ground carrier.
- 3) Streamline time-consuming paperwork.
- 4) Eliminate the repeated handling of every shipment.
- 5) Develop methods to effect faster transfer of shipments between cartagemen and airlines.

How is air freight handled on the ground today, with schedules planned to meet existing requirements? Let's look at the cartage operation of Mercury Air Freight which serves airlines in the New York area.

Most of the air freight arriving in New York travels at night and arrives between 2 a. m. and 4 a. m. To have the freight delivered in the city when the consignees open their doors, Mercury trucks start making their collection of inbound freight from the airlines at 6 a. m.

First they are brought to Mercury's terminal at Idlewild, where they are checked and sorted according to 32 delivery areas throughout the city. The trucks are loaded by 8 a. m. and start on their delivery runs. The major volume of air freight business is concentrated in Manhattan between 59th Street and the Battery and the average running time from the airport is 45 minutes.

Radio speeds pickup calls

Throughout the day calls are received from the airlines and shippers asking for Mercury pickup of air freight and, as these calls are received, they are dispatched to specific drivers over a radio communciations system.

By 5 p. m. the majority of calls have come in and the trucks, loaded with outbound air freight, start returning to the Mercury terminal. The freight is checked, sorted and manifested, with shipments for each airline listed in an individual manifest. By 7:30 p. m. the freight has been reloaded on trucks which are then dispatched.

Some shipments do move through the air during the day, of course, making use of available lift, but the schedule of ground pickups and deliveries is basically designed to handle freight that travels during the night.

Obviously, considerable change must be made on the ground to avoid nullifying the advantages gained in having shortened the flying time from one end of the country to the other. The airlines, through Air Cargo, Inc., are constantly studying new techniques for handling air freight on the ground and even now are accelerating their activities in planning and developing improved ground handling methods and facilities.

The speed of jet transportation in the air now makes movement of freight on the ground a race against time.

Continued on page 37

The Only Jet Transport to Meet or Exceed Every Performance Estimate

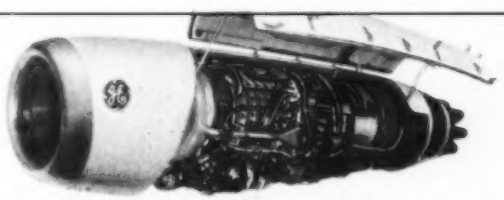
Convair's Jet 880 Powered by General Electric

YEARS AHEAD FOR YEARS TO COME!

In producing the Jet 880, Convair engineers have applied all of the knowledge gained during more than 35 years of building military and commercial aircraft.

The Convair 880 was thoroughly and painstakingly tested in wind tunnels and in static rigs which simulate every aerodynamic stress of flight. Airline pilots and engineers joined with Convair experts in perfecting the clear-vision cockpit. Human Engineering at Convair and contract designers made certain the passenger cabin would be the most luxurious ever planned.

Now after months of intensive flight testing, Convair's 880 has met or exceeded every performance guarantee. Powered by General Electric CJ-805 turbojets, the Jet 880 has proved it can cruise at 615 miles an hour in level flight—the world's *fastest* and most versatile jet transport. Outstanding fuel economy and storage capacity make it ideal for medium and transcontinental routes. With improvements in design and engineering that are as much as five years ahead of other jet transports now in production, the Jet 880, built by Convair, a Division of General Dynamics, has dramatically advanced the scope of the Jet Age—to bring you jet travel that is *years ahead for years to come!*



GENERAL ELECTRIC'S CJ-805—Power Plant for the world's fastest and most versatile airliner...

Convair's Jet 880 is powered by four General Electric CJ-805 turbojets. Advanced design and light weight of the CJ-805 engines make possible the outstanding thrust and rapid throttle response—from ground idle to full takeoff thrust in only 5.6 seconds. Since 1941, General Electric has been America's leader in the production of jet engines. The CJ-805, a result of this unmatched experience, brings maximum speed and dependability to the Convair Jet 880.

CONVAIR
A DIVISION OF GENERAL DYNAMICS CORPORATION

First to offer Convair 880 or 600 Jet-Liner service will be TWA, DELTA, TRANSCONTINENTAL (Argentina), REAL-AEROVIAS (Brazil), S.A.S., SWISSAIR, AMERICAN, C.A.T. (Formosa)

P&WA POWER KEYS FLIGHT PROGRESS . . .

1925—The original P&WA Wasp was the first radial engine to reach 400 hp. This engine, and its more powerful successors, helped bring world leadership in air power to America in less than five years.

1930s—P&WA power in early airliners pioneered the transcontinental and transoceanic operations of U.S. flag carriers.

1940s—P&WA and its licensees delivered over six hundred million horsepower to the war effort, half of all the horsepower powering the combined American air forces.

1950s—P&WA developed high-power, low-fuel-consumption jet engines for bombers, fighters, tankers, missiles and commercial jet airliners . . .

. . . AND THE STORY OF FLIGHT HAS ONLY BEGUN.

POWER IS THE KEY!

The exciting conquest of space depends on power—and power is Pratt & Whitney Aircraft's job. One of America's newest space projects, for example, will depend on an advanced, high-energy upper stage rocket propulsion system, the XLR-115, designed and developed by Pratt & Whitney Aircraft. The system draws heavily on Pratt & Whitney's unmatched experience in handling liquid hydrogen fuel.

This is only one of many projects which demonstrate that power is indeed the key to flight progress.

Flight Propulsion by **PRATT & WHITNEY AIRCRAFT**

East Hartford, Connecticut

A division of United Aircraft Corporation

The big bottleneck is paperwork. Every shipment must be listed on a manifest, checked and rechecked to avoid error.

Methods must be determined for eliminating every bottleneck, every delay that keeps a shipment standing still when it should be on the move. Every minute lost, whether it is at the shippers waiting for pickup or sitting on a dock waiting for a truck, is time that can never be recovered.

Let's look for a moment at the ultimate in handling freight on the ground. A call is placed by a shipper for pickup. It is immediately relayed to a truck in the area. Within a short time the pickup is made. With a minimum of delay it is sped to the airport by the fastest means possible. Upon arrival at the field the shipment is quickly delivered to the airline and loaded within minutes on the first available flight.

With inbound freight a similar Utopian arrangement takes place in reverse.

But, unfortunately until faster methods of traveling by truck over crowded highways can be devised, it is impossible to shorten the traveling time between the airport and the business section.

But, with that single exception, every other bottleneck and time delay can be either completely eliminated or shortened so that it is no longer a factor.

• Faster pickup—At the present time airlines and shippers call the cartageman for pickup of outbound shipments.

These calls are relayed by the ground carrier's dispatcher to the specific drivers via a radio communications system. The bulk of the calls is for late afternoon pickup to be made before the end of the business day for overnight shipment.

Needed: electronic writing system

More rapid relay of the shipper's order can be effected by the addition of two systems. A faster transmission of the order from the airlines can be accomplished through an electronic writing system already being used successfully in some sections of the country. The airline clerk writes the order and it is simultaneously received, in writing, at the other end. There is no room for error. A written record exists and there is never the delay caused by busy telephones or personnel.

The order to the truck driver can be expedited through an electronic call system which would signal the driver, wherever he might be. He then merely picks up his radio telephone and gets the details.

• More frequent trips—It is obvious that the only way that freight can flow steadily throughout the day is by keeping a regular and constant stream of trucks between the business section and airport. This can be done today, merely by addition of more equipment and personnel.

The only factor is cost. At present, the cost to the shipper for ground service is $1 per hundred pounds. At present volumes, the only possible way to double the service is to at least double the cost. Only when volumes increase to double the present level will it be possible to increase the number of trips without increasing the cost.

• Streamline paperwork—When time is of the essence, paperwork must be kept at a minimum. When paperwork falls behind, shipments cannot move. The major paper bottleneck today is the requirement to list every inbound shipment on a manifest by the airlines and each outbound shipment on a manifest prepared by the cartageman.

The elimination of this lengthy procedure can substantially reduce paperwork and result in more rapid movement of freight on the ground. As long as receipting is necessary, a revision of the airbill to provide an extra copy for this purpose would eliminate manifesting.

• Too much handling—It has been properly observed that air freight is probably picked up and set down more times than any other shipment in the world. The piece-by-piece handling starts when the shipment is picked up. It is then set down in the truck. At the cartagemen's terminal, it is picked up and set down on the dock; picked up and set down in the truck which delivers it to the airline; picked up and set down on the airline dock; and picked up and set down in the plane.

A solution: containerization

The waste of time and manpower is instantly apparent. To help this problem, much research has been taking place concerning "containerization." The ultimate goal is the development of a container which is light enough to be used on the aircraft, sturdy enough to withstand heavy usage, properly sized so that space is not wasted on either airplane or truck and collapsible so that it can be stored when not in use.

The development of a practical container will permit pre-sorting of air freight designated for individual airlines by the cartageman and save many steps in the piece-by-piece handling that wastes so much time today.

• Faster transfer operation—Probably the biggest of bottlenecks that must be corrected, if a continuous flow is to exist, is the transfer operation. As long as freight has to sit on either the airline dock or the cartageman's dock, waiting collection by sweep trucks, efficiency will be lost.

This delay can be overcome by the establishment of central consolidated terminal facilities.

One solution is the development of a T-shaped consolidated terminal. The cross on top of the T would be occupied by the airlines and the Body of the T occupied by the contractor, providing him with an island dock.

An integral power conveyer would be in operation between the airlines and the cartage contractor 24 hours a day, operating toward the contractor with inbound freight at certain hours and toward the airlines with outbound freight at other times.

Paperwork could be transferred between carrier and cartage agent by pneumatic tube in advance of the shipments.

This method would eliminate most of the transfer problems. Outbound freight would arrive at the ground carrier's terminal and immediately be placed on the conveyer belt. An automation system would deliver it directly to the proper airline's dock. No freight would be delayed and no airline would be kept waiting.

Upon arrival at the airline's facilities, the freight would automatically be delivered into a processing area, then readied for loading on the proper plane.

The arrival of jets in commercial air transportation has presented a tremendous challenge which must be met by the air freight industry on the ground. Now is the time to meet that challenge.

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THE BEST OF THE JETS . . . PLUS UNITED'S EXTRA CARE

Labor Speaks

BY B. I. CROFTS
Manager, Australian Federation of Air Pilots

Planning Blackout Is Hurting World Air Transport

NO ONE TODAY sees cause for comment in the continued appearance of the DC-3 aircraft in the skies of the world, 23 years after its first appearance.

Yet today, no one expects the Boeing 707, DC-8, Electra or other contemporary type aircraft to be seen in the skies of 1982. Indeed there is already more than a hint of the 2,000 mph plus aircraft of the early 1960's.

Perhaps the one disturbing feature associated with the dramatic and highly creditable technological advances is the apparent lack of coordination or liaison between all of the various interested sections of the industry.

To expand upon this problem as it applied to the industry as a whole, and in particular to the pilot labor force, we are, as an organization of pilots, perturbed at the paucity of information on what the future may hold.

We have already experienced the introduction of new type aircraft whose operations are severely restricted throughout the world by lack of adequate facilities, and whose passenger appeal and economic practicability in a world of private industry remains unproven.

However, it appears that by stretching existing facilities to absolute limits, at least an appearance of normal profitable operations is maintained. However, it is doubtful if these appearances can be kept up if the rate of technological advance in the performance characteristics of aircraft is continued with regard only to the desire to introduce larger aircraft capable of carrying passengers at far greater speeds.

In brief, while the old adage that one cannot halt progress may remain true, in the industry of commercial aviation, progress in one section while a magnficent technological achievement is, in commercial application, worthless unless progress is matched elsewhere in the industry.

The simple proposition that if you build a better washing machine you can create a demand for it and it can be sold and utilized, cannot continue to apply in the civil aviation industry, although it would appear that some believe it can, for while the demand for faster travel may be created in the minds of the traveling public, the initial sales program must fail when it comes to be realized that the faster travel may be negated by delays associated with lack of facilities to cope with the new form of transport.

However, what gives cause for concern is the conflict of forces which meet head on in the process of this development.

The capital investment represented by the development of the "better" aircraft, coupled with the stimulated public demand for its introduction presents a formidable opposing force to the strong counter pressure of budget limitations which apply to the development of airways facilities, the practicability of increasing runway lengths in built up areas, the feasibility of cramming more aircraft into the same air space, and so on.

While the pilot today may reconcile the two forces and make the aircraft fit the facilities, and the facilities suffice for the aircraft, the stage must eventually be reached when this would be impossible.

Then no doubt the regulatory authorities and the air pilots organizations will themselves call a halt, but there may be no well defined transition period, and the fear is that the borderline of operational common sense may be crossed, while the band heralds in the latest "biggest and best." In the interests of the fifth party, the traveling public, there must be closer appreciation by each of the four parties, the manufacturer, the government agency, the operator and the pilots of the other's problems.

It is in this atmosphere of rapid technological change and uncertainty as to the future that the labor force of pilots currently moves.

Airline pilots as a group are essentially international and a problem encountered by a pilot of Air France is of interest to a pilot employed by Qantas. The same airways facilities are used, generally the same aircraft types are operated, and substantially the same or similar routes are flown. It is natural that pilots are interested in compensation received by pilots in other countries and in the position in the community which the remuneration permits them to take up.

With this in mind, representatives of the Airline Operators' of Australia and of the Air Pilots recently undertook a world-wide survey of pilots' salaries at first hand for the purpose of ascertaining the relativity of those salaries to others paid to highly paid professional and administrative sections of the community. The results of those findings were unfortunately not accepted in this country, mainly because the Commonwealth Arbitration Commission to whom the evidence was referred, felt that such evidence was unreliable because the method by which the pilots salaries had been arrived at in other countries had no common basis.

We are seeing even today cases of pilots with 20 years experience, unable to cope with the manifestations of the jet age. Tomorrow more of the existing force of pilots may find that they have been left behind in this unprecedented development which we are currently experiencing. The numbers unable to cope with the additional problems of the coming age may serve as a useful warning that the necessary margin of human performance is being narrowed to an unsafe degree.

Probably the problem can be summed up by posing this question:

If one were today advising one's 12-year-old son on the requirements necessary to take up the profession of commercial pilot in 1969, what qualities would you tell him would be demanded, what academic qualifications would be required, and in what environment would he be performing his career?

Could you tell him?

Does the public get flimflammed when it buys certain brands of "airline" luggage?

And does this luggage result in increasing airline damage claims—which will be close to $1 million this year?

The answers are definitely "yes," say airline officials who deal with damage claims.

Damaged bags . . . $1 million headache

Bad Bags Boost The Breakage Bill

PEOPLE WHO BUY flimsy "airline" bags are asking for trouble—and an airline usually ends up paying a damage bill. One luggage manufacturer contemptuously refers to such bags as PDR luggage (Please Don't Rain).

Airlines, of course, aren't blameless. Some passengers claim the carriers can damage the sturdiest piece of luggage ever built. But there's no doubt that flimsy bags contribute to the problem.

A manufacturer can call any cheap lightweight bag "airplane luggage." And many purchasers have trouble telling the difference between good and bad luggage. Nevertheless, there may be a solution, and the airlines' top sales executives will hear a proposal this month.

The plan: A baggage test program. Airlines would retain an independent laboratory to test all types of bags to see if they meet certain standards. Manufacturers whose products passed the tests would be permitted to affix a "tested and approved" seal to their luggage.

Preparation of the proposal has been spearheaded by Warren A. Peterson, assistant to United Air Lines' senior vice president-transportation services. It has been endorsed by the industry's passenger relations managers and the Air Traffic Conference's ticketing and baggage committee.

But a lot of work remains to be done—establishing standards, retaining a laboratory, etc. Therefore, top sales officials will be briefed on the plan at the Nov. 17 ATC meeting in Seattle to see if they think the work done so far has been along the right lines and whether the program should proceed. They are the ones who eventually will have to vote funds for the tests. Best guess: $25,000 to $50,000.

For manufacturers of good luggage, the plan has obvious advantages. They could use the "seal of approval" on their products and in their advertising and promotion. Airlines would steer customers their way by putting literature at ticket counters explaining the tests and suggesting the purchase of approved bags.

Principal advantage to the airlines is also obvious: reduction of damaged baggage claims. In addition, they would have a "buyer's preference guide" when replacing any luggage that had been badly damaged. If an "approved" bag were damaged, they would know that improper handling was involved, could settle the claim accordingly—and investigate their handling procedures.

Peterson, who points out that not a single title in an airline organization has the word "baggage" in it although baggage is the most valuable inert cargo carried, has been concerned for some time about rising claims. "It seems obvious that the American public needs guidance in order to reach a point of greater discrimination in the selection of baggage," he said. "I strongly suggest that we offer some guideposts so that those who are uninformed as to the quality and construction of baggage may have at least some sort of help."

Airlines partly to blame

At least some luggage manufacturers have told Peterson that they are willing to stand up and be counted. They're enthusiastic about the program—but in the process of endorsing it they come up with a complaint: the airlines' baggage allowance forces construction of lighter luggage.

One manufacturer said: "We wholeheartedly endorse your program . . . You have been late in getting around to this procedure . . . We would . . . like to make the suggestion that you up your 40-pound limitation by 10 pounds, or at least 5 pounds, as this will give the additional assurance you need for luggage to 'take it.' As it is now, we are involved in the opposite of a horsepower race in an endeavor to reduce poundage. The inevitable result has been lightweight luggage and your involvement in the million dollars worth of damage claims."

Another referred to the "small baggage allowance in air travel, and the consequent obsession amongst travelers that they must have lightweight luggage (and then complain if it doesn't stand up)."

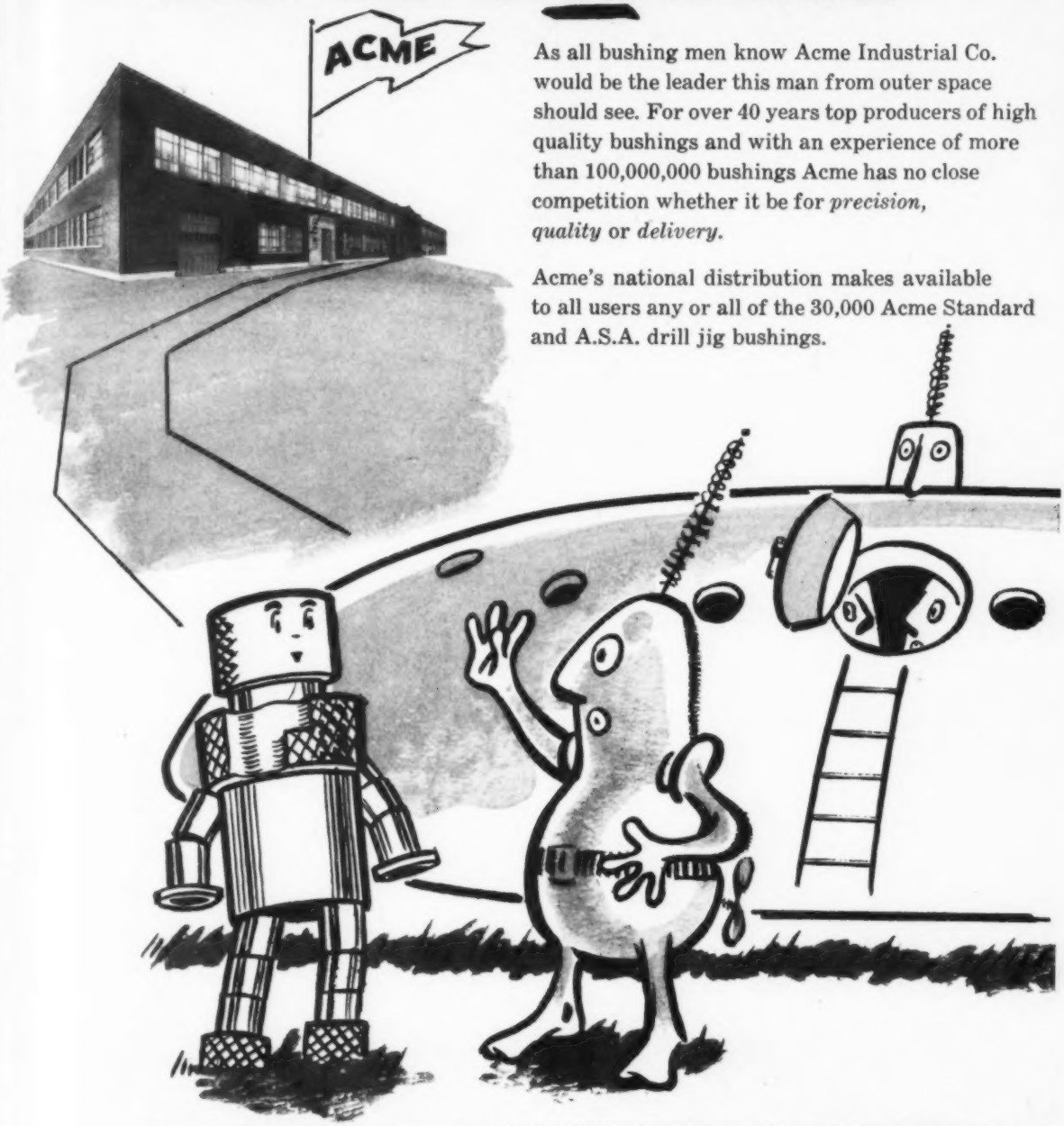
PETERSON

The Luggage and Leather Goods Manufacturers of America is reported to look with favor on another proposal: Airlines should discount the weight of each piece of luggage from a passenger's weight allowance. Each luggage manufacturer would stamp on his product—preferably under or near the handle—the attested weight of the case. When a passenger checked in, the airline agent would subtract this weight from the total weight. This procedure, it is claimed, would encourage manufacturers to build heavier, more durable bags. ATC officials say the proposal has not been presented to them.

Individual manufacturers have expressed willingness to stand part of the expense of establishing a test program. However, there is some feeling that the test results might be suspect if this procedure were followed.

Some airlines have their own lists of good and bad baggage, compiled from their payments of claims. They know which makes and types are the "dogs"—but there isn't much they can do about it. Thus the feeling that a seal of approval would influence the public in luggage purchases, and in turn reduce the headaches in claims departments.

"Take me to the Leader"



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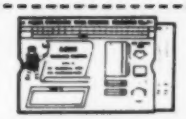

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First photographs of the Canadair Forty Four, taken September 30, 1959 in Montreal. The "Forty Four" is now on the line for Seaboard and Western Airlines Inc., The Flying Tiger Lines and the Royal Canadian Air Force.

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Airlines Need Higher Market Values

Equity Ratios Must be Supported to Finance New Jets

By SELIG ALTSCHUL

How Stands The Equity? This is a question that may well be asked in evaluating the current airline industry position.

The measure of airline equities is of major significance in the group's abilities to go forward in completing the financing expected to support expansion programs.

The U.S. airline industry is well along in its expansion drive which is expected to reach some $3 billion before the transition to the newer aircraft is completed by 1962 or thereabouts. Actual equipment on order at the end of 1958 exceeded $1.6 billion. Quite an undertaking thus faces the major U.S. airlines, including Pan American, which at last reports commanded equity or net worth of approximately $840 million.

The CAB's bureau of operations asserted that: "The industry has raised substantial funds for its equipment needs," and went on to declare that: "The conclusion is inescapable that the industry has been able to raise long-term funds on favorable terms."

This is a dangerous assertion for the board to rely upon. The fact remains that many of these long agreements are dependent upon earnings and/or new equity bolstering net worth positions to certain ratios before any of the credits can be drawn down. Further, working capital positions must be maintained at specified levels or these loans will be in default.

Earnings are therefore essential to bolster net worth positions so that existing debts and credits yet to be drawn down may be supported.

It is for this reason that the market value of airline equities becomes crucial.

Varying degrees of equity financing by several airlines may be required within the next four or five years. In order to sell new equity issues as well as avoid diluting the interest of present stockholders, it is essential that a market premium over book value be established over a continuing period of time.

It is not enough that a slight market premium over book may occur during abnormal boom market conditions as exist today for many industrial securities. It is the normal experience developed over a period of years that generally controls. During boom periods, like the present, market prices should be substantially higher than book if satisfactory new equity flotations are to be effected.

Prevailing market/book value ratios show wide variations among separate airlines and are evident in table I. A historical trend of these ratios for nine of the major airlines is presented in table II. In this instance, representative years are selected, permitting the tracing of the group's changing investment stature on significant periods.

The high premium over book prevailing for Northeast is abnormal and is without significance to the company's current earnings position.

The largest uninhibited market value premium, as of October 1, 1959, be-

TABLE I

NET WORTH AND MARKET VALUATIONS
MAJOR U.S. AIRLINES
(Based on June 30, 1959 Accounts)

	Common Shares Outstanding	Total	Net Worth Per Common Share	Market Per Common Share Oct. 1, 1959	Ratio Market/Book
American	8,621,247*	$142,289	$16.50	$25.75	156%
Braniff	2,948,119	37,047	12.57	12.38	98
Capital	909,659	11,937	13.12	14.25	109
Continental	1,731,212	15,005	8.67	8.50	98
Delta	1,222,221	37,410	30.61	28.75	94
Eastern	3,108,604	113,057	36.37	34.75	96
National**	1,675,254	36,400	21.73	19.50	90
Northeast	1,783,688	2,085	1.17	5.75	492
Northwest	1,834,006*	49,257	26.86	35.00	130
Pan American	6,574,698	129,948	19.76	23.63	120
TWA	6,674,155	111,528	16.71	19.88	119
United	3,815,100	131,616	34.50	41.00	119
Western	1,130,430*	23,756	21.02	33.00	157

* Assumes complete conversion of preferred or debentures.
** As of March 31, 1959.

TABLE II

TREND OF AVERAGE MARKET/BOOK VALUE RATIOS
FOR MAJOR DOMESTIC TRUNK AIRLINES
AT YEAR-END

	1941	1946	1948	1950	1952	1954	1956	1958
American	279%	332%	316%	252%	223%	169%	157%	186%
Braniff	142	330	134	122	135	95	101	128
Capital	221	371	...	171	113	120	186	140
Eastern	170	281	168	126	135	130	168	117
National	279	532	123	157	136	84	103	92
Northwest	139	204	98	80	83	62	73	148
TWA	172	299	1127	171	118	109	92	135
United	150	186	83	88	112	98	107	111
Western	156	380	95	97	101	87	107	177

longs to Western, followed closely by American.

It is noteworthy that back in 1946, airline equities were accorded very liberal valuations in the market place. This condition changed quickly as earnings failed to materialize to the extent previously anticipated.

In viewing the trends from 1941 to the present for the nine major trunk airlines where public ownership of securities predominated (table II), it is significant that current market/book value ratios contain little of the inflated hopes which were rampant, for example, in 1946. In that period, peaks for most airline market prices were established, and as they projected great hopes for the future, bore little relationship to underlying asset or book values.

An interesting corollary of the current valuations shown in table I is the aggregate market price of more than $711 million placed on the equities of the domestic trunks. In 1939, this writer observed that it would have been theoretically possible to purchase the equity interests of the entire domestic air transport industry for less than $40 million. That would have been a cheap price for control of a fast-growing industry.

The airlines have a continuing need for sustained and increasing earnings. Only in this manner will there be a fuller appreciation by the investment public of airline equities in the marketplace. And higher market/book ratios are needed if all of the airlines are to successfully complete their respective financing programs.

ON TIME PERFORMANCE—AUGUST, 1959

For the third consecutive month, Braniff Airways in August led the domestic trunks in "on time" performance.

Braniff scored 84.4%, bettering its July mark of 83.5%. United continued in second place with 80.9%, down from July's 82.5%. American held third with 72.4%.

Among the jet operators, TWA showed 37.9% with its 707s against American's 36.1%. Continental, which led in July with 53.1%, had not filed by CAB deadline.

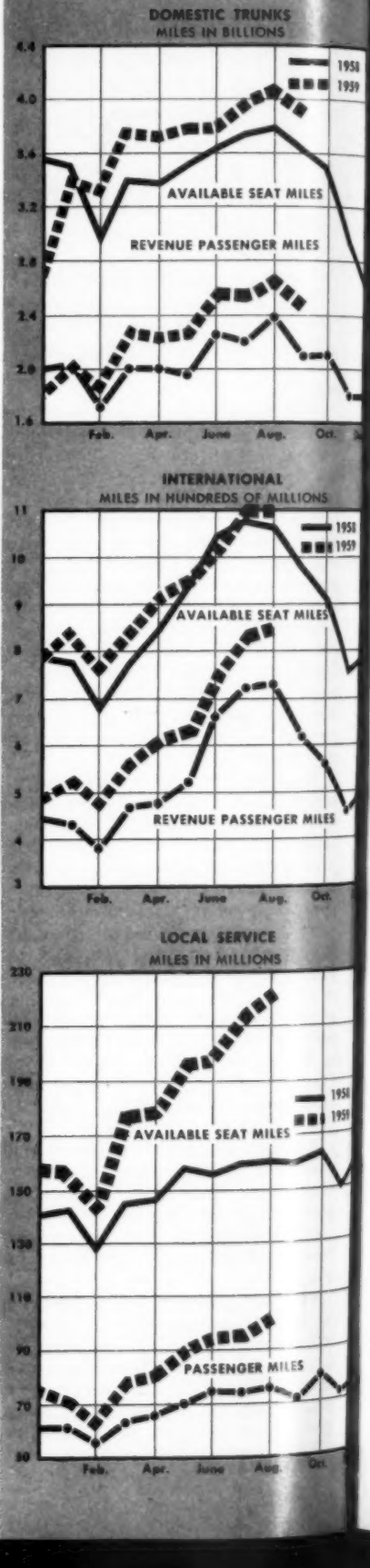
Braniff also took over the Lockheed Electra lead, scoring 74.3%. American, first in July, was second with 72.4%.

Standings among the local service lines changed considerably. WCA's 96.2% was first. Frontier took over second (87%) from Ozark, which fell to tenth.

		On time to 15 min. late		On time to 5 min. late	6-15 min. late	16-30 min. late	Over 30 min. late	Total trips reported
TRUNKS	Rank	July	August					
American	3	75.7%	72.4%	53.3%	19.1%	13.2%	14.4%	6458
Braniff	1	83.5	84.4	62.0	22.4	8.1	7.5	1698
Capital		55.6	NOT AVAILABLE					
Continental		70.2	NOT AVAILABLE					
Delta	5	65.6	65.6	35.3	30.3	20.8	13.6	1667
Eastern	4	64.8	68.1	44.2	23.9	17.2	14.7	5573
National	9	46.5	59.4	38.7	20.7	22.7	17.9	988
Northeast	7	51.2	62.7	39.8	22.9	15.7	21.6	3392
Northwest	10	62.2	59.2	37.8	21.4	19.8	21.0	1364
TWA	6	66.3	65.2	44.3	20.9	14.6	20.2	3190
United	2	82.5	80.9	58.3	22.6	10.1	9.0	4598
Western	8	75.5	62.4	39.7	22.7	17.9	19.7	1384
LOCAL SERVICE								
Allegheny	11	50.0%	63.0%	34.2%	28.8%	12.8%	24.2%	281
Bonanza	6	80.1	76.2	65.3	10.9	10.6	13.2	340
Central	7	95.0	72.8	47.8	25.0	11.3	15.9	44
Frontier	2	83.4	87.0	70.2	16.8	5.5	7.5	292
Lake Central	3	84.6	84.6	62.0	22.6	6.0	9.4	234
Mohawk	12	60.7	58.8	34.5	24.3	19.9	21.3	1097
North Central		77.9	NOT AVAILABLE					
Ozark	10	92.2	63.1	34.1	29.0	18.3	18.6	765
Pacific	5	—	79.4	58.0	21.4	9.1	11.5	243
Piedmont	4	66.7	80.7	58.1	22.6	16.1	3.2	31
Southern	9	66.4	67.8	32.9	34.9	25.0	7.2	427
Trans Texas	8	—	71.8	30.3	41.5	21.0	7.2	166
West Coast	1	95.0	96.2	93.2	3.0	2.3	1.5	269
BOEING 707								
American	2	42.3%	36.1%	17.5%	18.6%	18.9%	45.0%	804
TWA	1	34.5	37.9	12.2	15.7	22.0	50.1	801
Continental		53.1	NOT AVAILABLE					
LOCKHEED ELECTRA								
American	2	74.7%	72.4%	52.7%	19.7%	15.1%	12.5%	1156
Braniff	1	69.1	74.3	50.8	23.5	14.5	11.2	179
Eastern	3	63.7	67.2	45.6	21.6	19.7	13.2	1359
National	4	29.1	41.4	18.6	22.8	32.7	25.9	162
Western	5	NO OPER	15.4	2.3	13.1	32.7	51.9	305
LATE JULY REPORT								
Capital		55.6	—	30.1	25.5	22.7	21.7	4657
NW Orient		62.2	—	39.9	22.3	18.2	19.8	1506

All statistics reflect nonstop and one-stop flights only.

HOW'S TRAFFIC
Among U.S. Airlines



U.S. Airline Traffic for August 1959 vs. 1958

This complete summary compiled by AIRLIFT Magazine from Official CAB data.

	Revenue Passengers (000)			Revenue Passenger Miles (000)			Total Ton-Miles Rev. Traffic			% Available Ton-Miles Used	
	1959	1958	% Change	1959	1958	% Change	1959	1958	% Change	1959	1958
DOMESTIC											
American	705	642	9.8	567,135	473,271	19.8	66,115,853	57,165,220	15.7	63.4	60.9
Braniff	173	165	4.8	78,014	75,305	3.6	8,672,771	8,389,498	3.4	47.7	48.5
Capital	338	346	—2.3	137,269	136,735	0.4	14,330,325	14,329,943	.....	51.5	48.4
Continental	113	84	34.5	80,057	46,255	73.1	8,110,398	4,808,587	68.7	50.8	45.9
Delta	255	225	13.3	129,461	111,699	15.9	14,455,206	12,583,672	14.9	52.1	53.8
Eastern	733	658	11.4	402,408	358,308	12.3	41,734,988	37,191,738	12.2	43.2	48.0
National	139	118	17.8	83,987	68,893	21.9	8,903,309	7,359,372	21.0	45.5	43.9
Northeast	130	106	22.6	48,089	34,820	38.1	4,847,001	3,535,272	37.1	44.3	38.6
Northwest	171	154	11.0	139,263	124,025	12.3	15,462,697	13,591,432	13.8	54.2	55.4
Trans World	485	422	14.9	484,052	397,802	21.7	50,951,902	42,509,189	19.9	66.7	64.0
United	673	630	6.8	481,420	495,009	—2.7	56,025,118	57,242,360	—2.1	64.7	60.2
Western	168	126	33.3	96,926	69,950	38.6	9,932,100	7,304,533	36.0	55.8	46.5
TOTALS	**4,083**	**3,676**	**11.1**	**2,728,081**	**2,392,072**	**14.0**	**299,541,668**	**266,010,816**	**12.6**	**56.5**	**55.4**
INTERNATIONAL											
American	12	13	—7.7	11,759	12,627	—6.9	1,415,120	1,575,996	—10.2	72.1	63.3
Braniff	5	5	.....	9,378	8,660	8.3	1,128,155	1,052,301	7.2	61.0	48.4
Delta	5	6	—20.0	6,407	6,795	—5.7	745,983	799,810	— 6.7	50.0	50.3
Eastern, Overseas	45	43	4.7	65,209	60,520	7.7	6,921,177	6,417,740	7.8	73.6	65.6
San Juan	34	31	9.7	53,090	47,853	10.9	5,602,166	5,047,733	11.0	80.7	70.5
Bermuda	6	8	—25.0	4,912	6,097	—19.4	508,740	628,241	19.0	50.4	51.2
Mexico	5	4	25.0	7,207	6,570	9.7	810,271	741,766	9.2	55.9	53.2
National	8	11	—27.3	5,345	7,224	—26.0	622,374	826,012	—24.7	50.3	61.4
Northwest	22	17	29.4	41,654	37,386	11.4	6,544,746	5,990,176	9.3	67.1	73.8
Hawaiian	3	2	50.0	9,002	5,686	58.3	962,581	627,429	53.4	69.7	73.8
Panagra	11	10	10.0	17,648	13,311	32.6	2,435,253	1,965,528	23.9	64.6	54.0
Pan American, System	318	288	10.4	495,741	423,300	17.1	62,499,146	54,194,615	15.3	71.1	67.7
Latin American	138	120	15.0	160,420	129,280	24.1	19,997,235	16,738,612	19.5	72.2	68.1
Atlantic	137	135	1.5	191,337	192,621	—0.7	23,925,126	23,833,252	0.4	65.2	64.5
Pacific	36	27	33.3	136,636	94,878	44.0	17,562,530	12,765,291	37.6	79.3	74.7
PDX/SEA-HON.	2	1	100.0	6,331	4,196	50.9	700,508	478,188	46.5	68.2	52.2
Alaska	7	6	16.6	7,348	6,521	12.7	1,014,255	857,460	18.3	70.1	63.0
Trans Caribbean	10	8	25.0	16,438	17,443	—5.8	1,657,708	1,620,805	2.3	80.0	87.3
Trans World	42	37	13.5	134,989	109,322	23.5	16,653,011	12,973,825	28.4	69.9	62.0
United	16	13	23.1	39,291	32,264	21.8	4,275,284	3,534,993	20.9	85.9	73.4
Western	5	2	150.0	8,443	2,481	240.3	911,242	274,288	232.2	73.4	48.6
TOTALS	**499**	**453**	**10.2**	**852,302**	**731,333**	**16.5**	**105,809,199**	**91,226,089**	**16.0**	**70.6**	**66.4**
LOCAL SERVICE											
Allegheny	59	48	22.9	10,580	8,526	24.1	1,079,600	869,077	24.2	48.7	49.6
Bonanza	20	15	33.3	4,977	3,530	41.0	493,187	356,562	38.3	42.6	43.2
Central	15	13	15.4	2,972	2,491	19.3	306,644	257,544	19.1	35.1	31.6
Frontier	33	21	57.1	8,588	5,267	63.1	937,323	598,679	56.8	44.6	56.8
Lake Central	20	16	25.0	3,169	2,508	26.4	328,862	260,274	26.3	42.6	43.3
Mohawk	47	39	20.5	9,321	8,000	16.5	933,633	802,103	16.4	54.2	50.1
North Central	91	73	24.7	16,556	12,867	28.7	1,727,811	1,286,101	34.3	48.5	51.6
Ozark	49	37	32.4	8,561	6,227	37.5	899,003	649,529	38.4	46.2	48.9
Pacific	47	35	34.3	10,252	7,627	34.4	1,011,256	754,787	34.0	59.6	51.5
Piedmont	46	38	21.1	9,811	8,022	22.3	994,052	812,224	22.4	48.2	56.0
Southern	24	19	26.3	4,167	3,401	22.5	436,933	355,547	22.9	34.5	39.2
Trans-Texas	27	21	28.6	6,451	4,657	37.4	683,903	500,638	36.6	40.0	39.9
West Coast	34	24	41.7	7,559	4,366	73.1	751,259	443,784	69.3	48.0	51.4
TOTALS	**512**	**399**	**28.3**	**102,964**	**77,489**	**32.9**	**10,583,466**	**7,946,849**	**33.2**	**46.7**	**48.4**
HELICOPTERS											
Chicago	21	11	90.9	391	218	79.4	38,484	22,031	74.7	47.4	29.3
Los Angeles	6	4	50.0	194	127	52.8	25,283	18,203	38.9	70.4	64.4
New York	15	11	36.4	290	209	38.8	30,752	22,769	35.1	55.7	48.9
TOTALS	**42**	**26**	**61.5**	**875**	**554**	**57.9**	**94,519**	**63,003**	**50.0**	**54.9**	**42.0**
TERRITORIAL											
Caribair	33	25	32.0	2,259	1,710	32.1	245,491	183,242	34.0	72.8	71.3
Hawaiian	59	56	5.4	10,745	15,839	—32.2	1,051,443	1,543,204	—31.9	64.2	69.7
Trans Pacific	41	25	64.0	5,996	3,373	77.8	496,037	278,638	78.0	67.2	62.2
TOTALS	**133**	**106**	**25.5**	**19,000**	**20,922**	**— 4.4**	**1,792,971**	**2,005,084**	**—10.6**	**66.1**	**68.7**
ALASKA											
Alaska	11	8	37.5	9,538	4,740	101.2	1,403,510	852,730	64.6	63.0	48.4
Alaska Coastal	8	8	.....	862	681	26.6	96,962	78,022	24.3	63.5	65.6
Cordova	2	2	.....	293	332	—11.7	84,700	63,456	33.5	47.9	65.1
Ellis	8	7	14.3	486	457	6.3	55,173	51,238	7.7	71.9	75.1
Nor. Consolidated	4	3	33.3	1,296	1,001	29.5	243,701	214,101	13.8	68.7	68.2
Pacific Northern	17	16	6.3	17,061	16,082	6.1	2,293,197	2,189,175	4.8	74.5	73.2
Reeve	2	2	.....	1,404	1,513	—7.2	263,197	324,922	—19.0	59.4	65.4
Wien	7	7	.....	2,711	2,309	17.4	633,983	580,082	9.3	54.2	66.6
TOTALS	**59**	**53**	**11.3**	**33,651**	**27,115**	**24.1**	**5,074,423**	**4,353,726**	**16.6**	**66.1**	**64.9**

ALL CARGO

(Ton Miles in Thousands)

	Mail			Express			Freight			Total Scheduled			Total All Services**		
	1959	1958	% Change	1959	1958	% Change	1959	1958	% Change	1959	1958	% Change	1959	1958	% Change
Aaxico	NA	5,023	.....	NA	10,155	.....	NA	406,857	.....	NA	422,035	.....	NA	3,268,086	.....
Flying Tiger	31,097	31,044	0.2	61,135	18,367	232.9	7,357,379	6,080,811	21.0	7,449,611	6,130,222	21.5	11,409,180	13,060,098	—12.6
Riddle	6,267	17,116	—63.4	29,764	37,067	—19.7	1,472,120	2,075,597	—29.1	1,508,151	2,129,780	—29.2	1,593,865	2,315,260	—31.2
Slick (c)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,513,926	1,242,396	424.3
Aerovias	.....	.....	.....	.....	.....	.....	454,025	701,936	—35.3	454,025	701,936	—35.3	509,776	718,105	—29.0
Seaboard & Western	376,351	168,192	123.8	.....	.....	.....	1,815,281	1,216,267	49.2	2,191,632	1,384,459	58.3	2,516,561	2,533,713	— 0.7
TOTALS	413,715	221,375	86.9	90,899	65,589	38.6	11,098,805	10,481,468	5.9	11,603,419	10,768,432	7.8	22,543,308	23,137,658	— 2.6

**Includes charter military contract and in isolated instances passenger ton miles in charter operation.
(c) Charter operation only.

Max Holste's Big Bid: the Super-Broussard

MH-260 Turboprop Nears Completion

By JEAN-MARIE RICHE

Watch for the turbopropelled MH-260 "Super-Broussard," a newcomer infiltrating itself discretely in the DC-3 replacement market. This new feederliner was designed by *the* self-made man of the French aircraft industry: Max Holste.

On October 5, the Holste company made a great step toward practical production of the MH-260 when it concluded an agreement with Nord-Aviation securing the production facilities of this company for the construction of the Super-Broussard. Nord has produced more than 200 Noratlas cargo planes, now also built under license by the German aircraft industry.

And the Holste company has not been doing badly itself in producing about 250 of the Broussards (400 on order) which makes a good showing in hard military and civilian service.

Starting from this successful design, Holste evolved a heavier transport which, he said initially, was aiming at the replacement of a wide range of aircraft, from Rapides to Herons, for which no modern successor can be found. He built a prototype around 600 hp Pratt & Whitney engines, translating on another scale the principles of ruggedness and simplicity which had been so successful with the Broussard.

Six months of testing

This prototype began its tests in May of this year and has now logged 160 flying hours during which the aerodynamic characteristics of the design were proved and convinced all interested parties of the basic qualities of the aircraft. Meanwhile, it seems that from the very beginning of his work on the Super-Broussard, Holste had been eyeing a more ambitious development which would place him on the list of contenders for the DC-3 succession.

When he started cutting tin on the MH-250 prototype, the engines needed to achieve this project were not available. But now, Holste knows that for the MH-260, whose first article will fly in April or May 1960, he can rely on, at least, two turboprops in the 1,000 hp class: The Bastan 3 (which is to be boosted to 1,250 hp) of Turbomeca, a company of worldwide fame in small turbines and the Lycoming T53.

The first turboprop equipped Super-Broussard will be used for certification tests (U.S. standards CAR 4B and SR 422A) while the second aircraft which is to fly within one year from now will be used on demonstration flights. Further pre-production aircraft will begin their test flying in May, July and October 1961. The joint schedule of Holste and Nord calls for the first production plane to come out of the shops in December 1959. The target production of four a month will be reached in June 1962.

The new high-wing non-pressurized feederliner will sell at $230,000 or 113 million francs all furnished (but without radio and other optional equipment). This price applies to the Bastan 3 version. While Holste and Nord are closely associated for the production of the aircraft and decisions about the financial clauses of the orders, Holste has kept the responsibility of final assembly and test flying of the Super-Broussard. The sales will be under exclusive supervision of Holste.

The French government has helped Holste in building its first prototype and has given the green light to cut tin for the 260 turbopropelled version. And now that Nord is discontinuing its Noratlas production, the Super-Broussard project will keep the Nord plants busy and hence is assured of a serious official backing. The many airlines which have shown interest in the project have awaited the firm stand which is now being taken by the French government to materialize orders.

Operators are highly impressed by the fact that for the first time they are being offered a DC-3 replacement which is not built around engines designed to equip four-engined aircraft and is not oversized in capacity.

No pressurization

It is noteworthy that all the operators which are in contact with Holste have specified a non-pressurized fuselage and that the 23-seat configuration finally retained in the production version is rather on the upward than on the downward side. Because the Super-Broussard will eventually be used for cargo, a large door (4.7 x 4.7 ft.) is being built at the rear of the fuselage.

The baggage hold is large (109 cu ft.). The ruggedness of the design and the simplicity of maintenance, two qualities which are unanimously recognized for the Broussard, have been successful in the new design.

The maximum takeoff weight of the Super-Broussard (according to SR 422A specifications) is 21,165 lbs. (ISA conditions) or 18,520 lbs. (ISA +20° C conditions). Performance-wise the speed of the aircraft should be noted (213 kts/h. maximum continuous flying speed), one cruise speed (740 bhp at sea level) being of 205 kts/h., and an alternative (592 bhp at sea level) of 189 kts. Stalling speed (TAS) is 75 kts. without flaps and 48 kts. with flaps.

The aircraft can well be described as having STOL qualities since at the weight of 18,078 lbs. at takeoff (flaps at 30°) it needs not more than 705 ft. ground run and clears the 50 ft. obstacle in 1,197 ft., and for its landings, 1,279 ft. are sufficient to clear the 50 ft. obstacle, the braking distance being of 853 ft. The maximum range at 9,842 ft. is 870 st/miles.

Specs on the MH-260

General	
Wingspan	71.69 ft.
Overall length	58.10 ft.
Height (in level flight attitude)	20.96 ft.
Propeller clearance (in level flight attitude)	6.89 ft.
Structure Dimensions and Areas	
Wing group:	
Wingspan	71.69 ft.
Wing root chord	10.17 ft.
Wing tip chord	5.90 ft.
Total area	592.01 sq. ft.
Aspect ratio	8.8
Taper ratio	1.72
Dihedral	3°
Incidence	+3°
Fuselage:	
Overall length	58.10 ft.
Max. width	7.58 ft.
Max. height	8.30 ft.
Max. width of cabin	7.18 ft.
Max. height of cabin	6.56 ft.
Min. height of cabin	5.97 ft.
Length of cabin	21.32 ft.

SYMBOL OF A NEW SERVICE TO AVIATION

Frederick B. Ayer & Associates, Inc. is the world-wide aircraft center where airline operator or corporate user can complete all the complexities of an aircraft transaction. All types of Douglas DC-6s and Convairs, units or entire fleets, are offered for sale or long- or short-term lease, as well as a variety of other pressurized aircraft available through Ayer's equipment exchange and trade-in policy. Ayer's agreements with American Express and AiResearch provide world-wide financing, custom interiors or complete modifications. For Ayer customers there is also crew training, plus counseling on engineering, operations and insurance. Let this symbol of a new service to aviation be your symbol of complete satisfaction.

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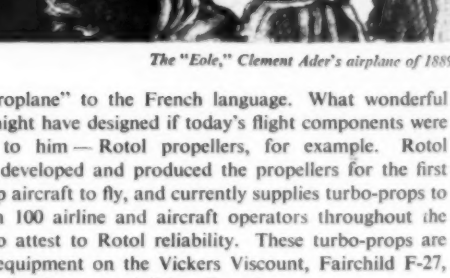
Propulsion through the ages . . .

The "Eole," Clement Ader's airplane of 1889

An astounding proposal: through the air on bat-like wings adjusted by a series of wheels and pulleys operated from the cockpit . . . powered by a 20 h.p. steam engine turning a single four-blade propeller. Such was the "Eole" of 1889, designed and built by Clement Ader. The gallant French aeriel pioneer attempted actual flight in October of 1890 and claimed success, though the unromantic considered his "hop" little more than a free fall broken by the feeble cranking of the airscrew. Nonetheless, Ader was clever, brave and persistent, and added the word "aeroplane" to the French language. What wonderful craft he might have designed if today's flight components were available to him — Rotol propellers, for example. Rotol designed, developed and produced the propellers for the first turbo-prop aircraft to fly, and currently supplies turbo-props to more than 100 airline and aircraft operators throughout the world who attest to Rotol reliability. These turbo-props are standard equipment on the Vickers Viscount, Fairchild F-27, Grumman Gulfstream and Fairey Rotodyne.

ROTOL

The world's most experienced manufacturers of turbo-propellers — over 6,000,000 hours of flying time.



Rotol Incorporated after-sales service throughout the United States provides immediate spare parts delivery, technical service on propeller operations and applications.

For information on Rotol products and after-sales service, call Rotol Incorporated, 409 Jefferson Davis Highway, Arlington 2, Virginia. Phone OTis 4-6290

SPECIAL REPORT

Where the Jets Stand on Retreads

The future of the aircraft tire retread, if ever at doubt with the introduction of heavier and faster jets, is being shaped quite permanently as the result of initial operations with the Boeing 707.

An exclusive *AIRLIFT* survey of four major airlines discloses that all are using them. Although reports still remain sketchy, at least one carrier, Pan American, says they are out-producing original new tires in the average number of landings between replacements by 125 to 90. TWA can't get that specific, but it is convinced retreads show improved service over original treads because tire growth stabilizes during the original service run.

To date, CAL and TWA have set a limit at two retreads per jet tire, AA allows three and Pan Am hasn't yet formulated its retread policy. American and TWA use a combination of retreads by both the original tire manufacturers and independent retreaders (Thompson at AA, Thompson and McDowell at TWA) while CAL uses tire manufacturers only and Pan Am retreads with Thompson.

Meanwhile a blossoming array of experienced independents, all members of the Tire Retreading Institute, are in various stages of gearing their facilities to handle the jet business. Here's how they stand:

Dee-Nap Electric Mold Co., Macon, Ga.—Aircraft retreader for seven years; retreads for other than airline activities including military, aircraft service firms, etc.; handles all sizes, 600x6 through 2500x28; grosses more than $1 million annually; has completed dynamometer testing and is approved for jet retreading.

Ed Dougherty General Tire Co., Dallas, Tex.—In aircraft retreading more than 10 years; handles Braniff, Trans-Texas, military and aircraft service firms; equipped for 30 tire sizes; retreads approximately 5,000 tires annually now giving top priority to qualifying a retread for jets.

Gordy Aircraft Tire Co., Atlanta, Ga.—Retreader since 1954; handles airline, military and other civil aircraft retreads; all sizes; retreads 17,000 annually; has passed high-speed dynamometer tests on 707 tires; is processing DC-8 tire approval to be followed 45 days later by 880 tire approval.

Hancock Aviation Division, Ltd., Ontario—Retreading since 1946; handles about 75% of airlines in Canada, RCAF and RCN; 30 sizes; processing approval of jet retread.

McDowell Tire Co., Kansas City, Mo.—Retreader since 1948; handles TWA, Capital and Lake Central; also military and aircraft service firms; sizes 5.00 x 5 through 2500 x 28; retreads 4,500 to 5,000 annually; approved for 707, processing tire for Convair 880 and 600 and awaits availability of dynamometer time for DC-8 approval.

Moreman Tire Co., Corpus Christi, Tex.—Retreader since 1945; handles military and aircraft service firms; 30 sizes; retreads 7,000 to 12,000 annually; working on jet retread approval.

Shelby Tire Co., Memphis, Tenn.—Retreading aircraft tires since 1942 and pioneer with C&S Airlines (now Delta) in multiple retreads for aircraft; retreads for eight airlines; 26 sizes; handles 9,360 tires annually; processing approval on four jet retreads for Boeing 707, DC-8 and 880; expects approval by Nov. 15 on first, all four by March 1960. Delayed by lack of available dynamometer time.

Thompson Aircraft Tire Corp., San Francisco, Miami and New York—Retreader since 1943; has handled retreads for 113 U.S. and foreign airlines; also military and other civil aircraft; 82 sizes; retreads 25,000 aircraft tires annually; qualified on 707, processing tires for the DC-8, 880 and 720 airplanes.

Vernon W. Sanders, president of Thompson, estimates that savings netted from retreads by his firm alone during the past 15 years amounts to some $28 million. In that period the company has handled 350,000 retreads averaging $40 each against an average of $120 for a new tire, or $80 per retread.

Sanders feels the proposed FAA standards for jet retreads appear realistic except for pending requirements involving testing separately for each ply rating and some additional low-speed landing tests.

Ward Lynn, manager of aircraft tire retreading for McDowell told *AIRLIFT* that independent retreaders have faced problems securing test time for jet tread qualification and that the test program of FAA makes it extremely difficult for the independents to compete with major manufacturers in retreading.

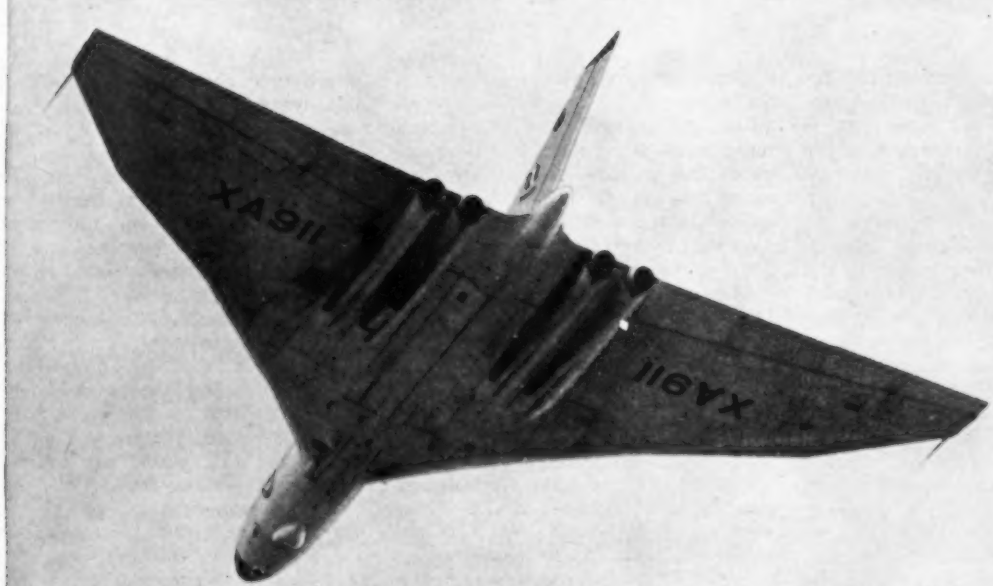
According to Shelby's Ben Gay, his firm has successfully retreaded piston aircraft tires up to 16 times and its average number retreads for its customers runs 7.5 per tire purchased including removals for all reasons.

707 Retread Boxscore

Airline	Using Retreads	No. of Retreads	Retread Agencies	Tire Costs* New		Retread	
				N	M	N	M
AA	yes	Three	Thompson & new tire mfrs.	$135	$260	$54.	$76.
CAL	yes	Two	New tire mfrs.	147.29	259.34	53.26	76.12
PAA	yes	NA	Thompson	150.	280.	60.	80.
TWA	yes	Two	Thompson, McDowell & new tire mfrs.	150.	270	50	95.

*Approximate. NA—Not Available. N—Nose. M—Main.

V-bombers fly over 10 miles a minute, over 10 miles up, for over 10 hours..



...AND BRISTOL SIDDELEY

One of the largest manufacturers of motive power units in the world, Bristol Siddeley Engines Limited produce two outstanding high-thrust turbojet engines—the Olympus and the Sapphire.

Between them these two engines power the major part of the RAF's strategic V-bomber fleet. Olympus engines, delivering up to 17,000-lb thrust dry (other versions will produce as much as 33,000 lb), power the Avro Vulcan Mk 1 and 2. Sapphires power the Handley Page Victor Mk 1. These engines give the V-bombers sonic capability—long range—great altitude—superior performance to any other aircraft of their type in the world.

BRISTOL SIDDELEY ENGINES LIMITED
BRISTOL AERO-INDUSTRIES LIMITED MONTREAL

...SUPPLY THE POWER

Bristol Siddeley Proteus powers Britannia airliner. Four Proteus give 130-seat aeroplane a speed of over 400 —a range of over 5,000 miles. Britan- are in service with twelve airlines and RAF Transport Command.

The Star Sapphire car is powered by a Bristol Siddeley 4-litre engine. Combining great power with exceptional quietness and luxurious comfort, the new Star Sapphire has a top speed of over 100 mph and an outstanding all-round performance.

Bristol Siddeley Viper turbojets range from 1,640—3,000-lb thrust. Vipers power the Australian Jindivik, the Hunting Jet Provost, the Italian Macchi MB 326 (illustrated), and have proved their supersonic capabilities in mixed powerplant fighters.

By FRED S. HUNTER

Next entrant in the aircraft leasing field may be the Douglas Aircraft Co. It will take this means to get its money out of the 15 DC-7s it is taking in on trade on DC-8 jets—ten from United Air Lines, five from Northwest Airlines. Needless to say, Douglas would much prefer to sell these DC-7s outright, but buyers with a need for long-range aircraft of the piston variety, and also with the cash to pay for same, are in short supply right now, and the leasing route appears to be the only alternative.

Happy Days in 880 Engineering

Engineers at Convair are getting prouder and prouder of themselves over the performance of the Convair 880. The flight test program on the new jet keeps progressing at a great rate. Sales, unfortunately, have not shown the same progress. But Convair still believes it has a winner. Its sales staff is confident it will cash in on passenger reaction once the 880 goes into airline service.

Convair also is taking no little satisfaction in one of its better management decisions. Before it went ahead with the 880 Convair obtained an agreement from the engine manufacturer to design and supply the sound suppressors and thrust reversers for the CJ805-3 engines. Thus Convair escaped a development expenditure which has added up to more than $20 million for Douglas on the DC-8 and something in the same area for Boeing on the 707. For the 880, General Electric assumed full cost.

Faster Baggage Handling

How much faster is delivery of your luggage under the container system devised for the new jetliners? At least twice as fast. We've seen it happen. A while back we arrived at Los Angeles aboard a Western Air Lines DC-6B, which had a load of 30 passengers. An American Airlines 707 landed seconds later on the parallel runway and taxied in right behind us. American and Western use the same baggage area at the Los Angeles airport. We were waiting patiently when WHOOSH, as they say at KLM, six containers from the 707 were tractored in and the luggage quickly distributed. A moment or so later the Western bags arrived. In other words, the baggage for more than 100 passengers on the jet was handled ahead of the baggage for only 30 passengers on the DC-6B, which had tied up at the gate first. This was not due to any undue delay on Western's part; Western's baggage disposition, as a matter of fact, is better than average. It was simply the difference in the system.

New Salesman for Douglas

Douglas came up with a sharp move, in our book, when it reached into the engineering department for its new director of commercial sales, Jack McGowen, following Nat Paschall's departure from the post of vice president-sales. It enabled Douglas to keep its well-organized commercial sales operation intact, with Jake Moxness heading up domestic sales and Jim Clyne taking care of the international market. Moreover, engineers always have done a lot of the selling at Douglas and McGowen had considerable experience along this line in association with those two old pros, Moxness and Clyne, during his tenure as chief project engineer on the DC-6/7 series. We'll miss our guess if engineer McGowen doesn't do a real top job as salesman McGowen at Santa Monica.

How Do You Like Your Seats?

Airline passengers don't realize the effort aircraft manufacturers—and the airlines—put into the seats they sit in. Lockheed redesigned the Electra seat five times. Douglas spent three years building the seat for the DC-8. Convair spent an equal length of time on the 880 seat. Quite often, airlines choose an alternate seat manufacturer in seeking a seat more to their liking even though this entails extra cost. Hardman Tool & Engineering, for example, built the seats for American Airlines' Boeing 707s. TWA, on the other hand, turned to TECO, Inc. for its 707 seats.

Small-size table separating seats in American Airlines' Boeing 707s wins approval of airline pres. C. R. Smith.

C. R. Smith, president of American Airlines, counts as one of the great improvements in AA's 707 seats, the table arrangement between the arm rests. Keeps your neighbor's elbow out of your ribs.

Are Turboprops Jets?

Which airline first used the term jet power, actually now even more commonly used in promoting turboprops than turbojets? Continental, says President Bob Six. At the time it introduced its Viscounts. The man who coined the phrase for advertising purposes was Charlie Rheinstrom, now executive vice president of American Airlines, but then a vice president of J. Walter Thompson, Continental's advertising agency.

Turbofans Have Muscles

Airline interest in turbofans continues to grow day by day for the very good reason this new type engine offers more for the money. With JT3 turbojet engines, both the Boeing 707 and DC-8 are underpowered for hot day operations. Converted to JT3D turbofans, they'll have thrust to spare. Turbofans were first proposed at a thrust rating of 13,000 pounds. This promptly proceeded to grow into the 16,000/17,000-pound category. Now they're headed for 20,000 pounds.

A Supersonic Jet Race?

There are hints that a supersonic transport race between the U.S. and Great Britain may be in the making. A great deal of prestige would accrue to the nation which comes out first. But for any one company the risk would be great. One manufacturing executive estimated that it would cost his company half a billion dollars to develop a supersonic transport. "It could break the company," he observed. In the final analysis a joint venture between the U.S. and Great Britain, not a race, might be the eventual outcome in development of a Mach 3 transport.

Pals Will Be Pals

George Sanborn, director of sales and contracts for the Boeing Airplane Co.'s transport division, was in New York a while back when a group of friends took him to dinner at a Russian restaurant where a fortune teller was one of the attractions. George suffered a bit of a shock. One of the fortune teller's prophecies was that within the year George would be moving to Santa Monica.

Efficient 'Round-the-Clock Service For Kansas City

Eddie Fisher, OX-5 and Aero Club, a "young pioneer" who built his own first plane. He has been flying since 1930.

Home-based fliers, military and executive transients, all appreciate the dependable service at Eddie Fisher Flying Service.

Kaiser (above) heads up the skilled A&E's at die Fisher Flying Service.

● Eddie Fisher started his Flying Service at Fairfax Airport in Kansas City, Kansas, in 1935. Since that time his devotion to aviation and his straightforward way of doing business have earned him the respect of airmen everywhere.

At Fisher's the emphasis has always been on quiet efficiency and attention to details—the kind of service in which fliers have confidence. Licensed A&E's are expert on everything up through DC-3's. Also available are complete radio and instrument maintenance and installation; charter service; extensive storage and tie-down facilities; used airplanes for sale; and dependable Phillips *66* aviation oil and fuel—Grades 80, 91, 100 and 115, and jet fuel.

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Adds the 2374 Nav-Pac which provides VOR and localizer signals to the 4080 visual indicator. Also the 2374 provides 75 mc marker beacon signals to phones or speaker. Also adds the 4080 indicator which provides rotable omni-bearing selector, to/from indicator, course deviation needle, and direct reading reciprocal bearings. An adapter is available at low extra cost to add a transport type single light indicator. (28 volt $200 additional)

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Minneapolis meet full of new attractions, such as this JetStar armchair designed for Lockheed by Henry Dreyfuss

At NBAA Show: the 'Big Sell' Takes Over

MINNEAPOLIS—The U.S. business pilot, corporate aircraft pilot, executive pilot—call him what you may—has come into his own as an aviation buying power of no small proportion.

He ranks with airline presidents as the target of aircraft sales; with vice presidents of engineering on component selection; with v.p.'s of sales on choosing interior decor. He has become the most influential single factor in shaping the trend of business aircraft and equipment purchases in this booming segment of U.S. air transportation.

This was abundantly clear recently as close to 1,000 convened here for the National Business Aircraft Assn.'s 12th Annual Meeting and Forum.

The technical agenda, programmed by NBAA for its business pilot members, was completely overshadowed by their voracious appetite for information on new aircraft and by the legion of manufacturers on hand to supply it.

Small, four-place types, fixed-wing and helicopter, a new twin by Beech, North American and Lockheed with utility jets; Fairchild, Grumman, Canadair with turboprops; Rolls-Royce, Allison and Napier with the engines that will power them; P&W and Canadian P&W with the JT-12 jet and new PT6 turboprop; these were but a few of a big force of suppliers on hand to attract the business pilot to their hardware.

Here's what they had to report:

Beech Aircraft Corp.: A new 6-passenger twin, the $120,000 Model 65 Queen Air, slated to be formally introduced later this month for delivery in early 1960. Powered by 340-hp supercharged Lycoming IGSO-480-A1A6 engines, it will gross 7,700 lbs., cruise at better than 200 mph with a range exceeding 1,000 miles. Empty weight is 4,733 lbs. and useful load, 2,404 lbs.

Newest at Beech in executive transport, unveiled at NBAA, is the Model 65 Queen Air which will sell for $120,000 list for standard version.

Dimensions: Span 45 ft. 10.5 in., length 33 ft. 4.5 in. and height 14 ft. 2 in.

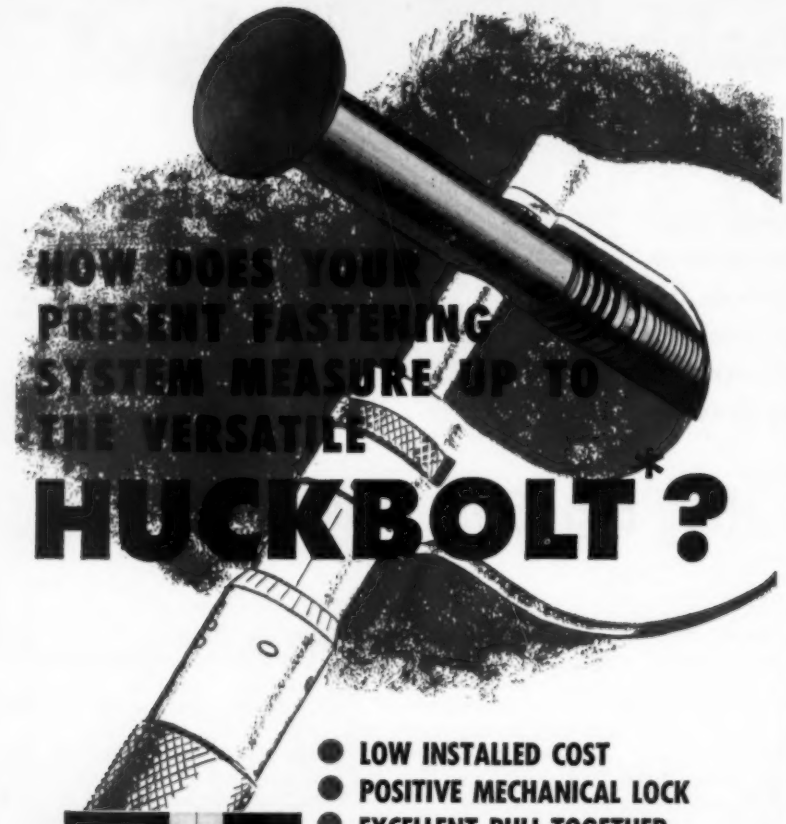
Cabin design features an integral stair door.

North American Aviation: The big decision by NAA on its marketing of an executive Sabreliner small jet will come at a directors' meeting November 24, R. J. Pfeiffer, director of commercial sales reported. He also disclosed a follow-on USAF order for 35 models, raising the total production to 42. Look for a definite go-ahead by NAA and the appearance of a commercial demonstrator within a matter of months.

Lockheed: Biggest "plum" of the session came to Lockheed Georgia Division via the Pentagon's announcement that the JetStar was picked as its off-the-shelf utility jet. Lockheed reportedly holds 14 firm executive orders for JetStars and is in final negotiating stages on about 25 others. F. A. Cleveland told NBAA that, although JetStar cost per flight hour may exceed $500, its speed will bring per mile costs to piston levels. On long flights they will drop below $1.10 per mile based on 600-hr. annual utility and using 27¢ per gal. for fuel cost.

JetStar tooling is complete; the No. 1 fuselage is in the mating jig and subassemblies have progressed to the No. 3 airplane. As a sidelight to JetStar sales, Lockheed unveiled a new executive mobile armchair developed by designer Henry Dreyfuss. It swivels, slides back and forth and reclines.

Allison: Commercial sales manager J. E. Beaumonth of Allison and Vern O. Benfer, president of PacAero Engineering Corp., designated conversion agency for the Super Convair ex-



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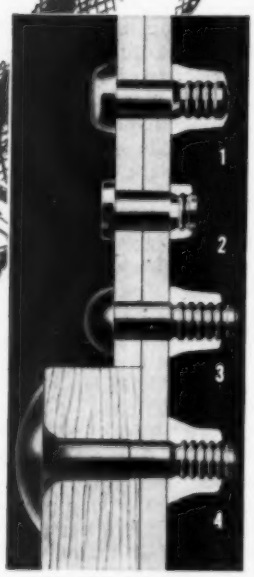

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BUSINESS FLYING

tended a sales stimulus for the Allison-powered Convair with the announcement that Braniff Airways is negotiating modification of four 440s. Goal is to set up an initial conversion line of 20 aircraft and 17 spots already are accounted for. A new executive brochure on the Super Convair shows it to be 80 mph faster than its piston predecessor (about 345 mph), increased takeoff weight (to 53,200 lbs.). It lists cruise specifics of 0.484 at 2,150 eshp based on 1,040 lbs./hr. consumption at 20,000 ft., 350 mph. Prototype will fly about January 1 and certification is due March 4, 1960.

Napier: B. J. Vierling, U.S. sales representative, reported average costs of only 97.47¢ or 2.2¢ per revenue seat mile in Allegheny Airlines trial operation of the Napier Eland powered Convair in scheduled airline service. Vierling related this seat cost as directly comparable with that of a much larger turboprop now operating on stage lengths triple that of the 540. A coach version of the 540, he pointed out, would operate at less than 1.5¢ per seat mile.

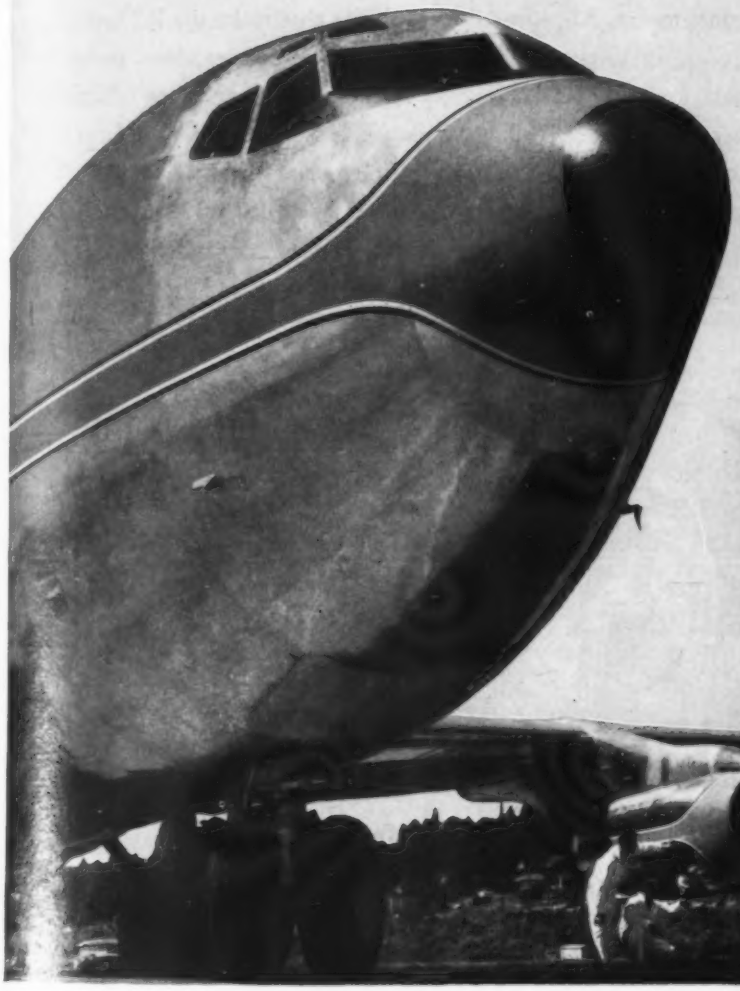
Rolls Royce: A promise of brighter prospects ahead came in the announcement by R-R's P. John Waite, that Capital Airlines has a 2,300 hr. overhaul period on the Dart engine (powerplant for executive F-27s and Grumman Gulfstream also) and that Rolls has a project to extend it to 3,000 hrs. This is beyond the scope of anything ever achieved with piston engines.

Fairchild: As a measure of how business aircraft operators stand to benefit from airline experience, Phil Mack, Fairchild's manager-corporate sales pointed out that local carriers flying F-27s are now amassing the equivalent of a year of business flying every 18 days. Average stage lengths run 70 miles, three takeoffs and landings are made per hour, 8,200 flights a year. Mack quoted one executive F-27 pilot's cost figures to date: "Fuel costs 26¢ per gal. We add ½ pint of oil per week. There is no engine maintenance. And Fairchild does my 100-hr. inspection at a flat rate of $1,150."

Grumman: The twin Dart-powered Gulfstream attended the Minneapolis session "in person" for the first time this year. Grumman reports orders for 40 are on its books, 16 have been delivered to its distributors, and this number will reach 28 by the end of the year. 1960 plans call for four per month. Price tag of the Gulfstream was adjusted earlier this year from $845,000 to $896,000.

SUNDSTRAND DRIVE...

reliability



As of August 24, 1959, more than 194,000 drive flight hours had been accumulated by Sundstrand constant speed drives on the fifty-one Boeing 707 Jetliners in commercial service.

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FAIRCHILD F-27

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QUEBECAIR

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WEST COAST AIRLINES

WIEN ALASKA AIRLINES

FAIRCHILD F-27

FAIRCHILD ENGINE & AIRPLANE CORPORATION

By CAPT. J. D. SMITH

Why Pilots 'Forget' Near Miss Reports

The "near miss" is a subject which has been discussed by many segments of aviation for many years. Elimination of the "near miss" problem has not yet taken place. However, all the debates concerning this problem do reveal a new broad concept upon which airspace users seem to agree.

No one, particularly a pilot, enjoys being a party to a "near miss." No pilot intentionally contributes to causing a "near miss." But regardless of weather, there are occasions when visual avoidance of other aircraft is most difficult and sometimes is impossible.

The primary conflicting factor of the "near miss" is an acceptable definition. What constitutes a "near miss"? How close must aircraft approach each other to create a "near miss"? Is it possible to accurately determine exactly how close aircraft come to each other?

Are reports useful?

Aside from these considerations, there is another important area. Does "near miss" reporting provide any useful information?

Defining a "near miss" is not a simple matter. Consider that present Civil Air Regulations legally permit aircraft to pass vertically with 500 feet separation during VFR conditions. This would tend to indicate that vertical separation of less than 500 feet is contrary to CAR.

Lateral separation requirements during VFR conditions *are not even specified*. If 500 feet vertically is legal, can a pilot assume the same is true laterally? This line of thinking may be realistic solely from a legal standpoint. However, remember the following.

A transport pilot had his ATR revoked for 12 months because CAA alleged his actions endangered the lives of his passengers and those aboard another aircraft. The two aircraft involved were *more than a mile apart*, which is 10 times the separation legally authorized. We are not taking sides in this case, but merely point out it is possible to become involved in a violation even though more than the so-called required separation is maintained.

No separation standard

Because of this, a pilot is in a most unfortunate position if he becomes involved in a "near miss." The regulations require that he avoid other aircraft, *but fail to stipulate acceptable separation standards.*

Normally, in processing "near miss" follow-ups, the pilot is also exposed to charges of dangerous and reckless operation (CAR 60.12). This has the effect of convicting the pilot until he proves himself innocent.

Many of these unbalanced factors were recognized by the CAB when it established the Voluntary Near Miss Reporting Program. The purpose of this program was to pinpoint problem areas, and from this information to launch corrective action. Although some dispute the merits of this program, we feel that some good resulted. If nothing else, thousands of pilots expressed personal concern with the "nearness" to other aircraft.

One of the early programs undertaken by FAA was the establishment of a "Near Miss Team." Its task was to rapidly evaluate "near miss" reports. The findings would eventually become available to FAA lawyers who would decide the next step.

To report: foolish

Subsequent actions by the FAA lawyers clearly showed a pilot oftentimes was a fool to formally report the "near miss." Even though no formal violation resulted, there still was the matter of properly explaining the "extenuating" circumstances, all of which could have been avoided merely by keeping quiet.

While formal "near miss" reporting is subsiding, the mid-air collision problem is not. This potential problem increases as additional commercial jet aircraft utilize the higher altitudes and intermingle with VFR traffic.

Practically every segment of aviation realizes the advantages of an effective incident reporting program. Such an effort provides an intelligent means for constantly monitoring operations. Without such an effort, improvements usually come about only after aircraft are damaged or casualties unnecessarily mount.

No current aviation safety problem can replace the potential mid-air collision in importance. Ironically, the agency responsible to foster aviation and maintain a high degree of operational safety, through actions of some of its personnel, is drying up sources of information—information which would help maintain an effective prevention rather than corrective approach to current problems.

Pilots silent

If current Civil Air Regulations properly considered human capabilities and aircraft requirements, the adverse effect of legal harassment could be largely overcome. However, such is not the case. As a result, pilots are not talking unless certain they are in the clear.

This silent attitude causes some (mostly lawyers) to express an element of dissatisfaction towards pilots. To this we can only ask: "how often does anyone voluntarily surrender his driver's license by reporting to a motor vehicle bureau that he has ignored an unrealistic driving regulation"?

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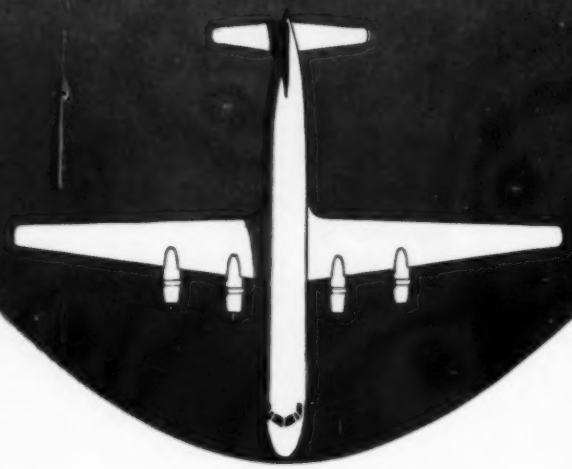

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LONDON LETTER

By MICHAEL DONNE

Britons Knit Brows over Supersonic Transports

Among many significant air transport decisions which will confront the newly reelected Conservatives in the next few months is whether or not to proceed with the manufacture of a supersonic transport.

This is a difficult decision. The aircraft industry is divided not only on what shape such an airplane should be, and how fast it should fly, but also on the very fundamental issue of whether it should be built at all, in view of the heavy cost involved (upwards of $280 million) and the limited market awaiting the finished design.

In Britain, only British Overseas Airways would be a likely purchaser, which means that the bulk of return would have to come from export sales. Any British supersonic transport would have to compete in performance, price and time-scale with any American version which could expect to have some measure of support from the larger home market denied to British manufacturers.

Some sections of the British industry have suggested that it would be wiser for Britain to undertake the development in collaboration with the U.S., although so far nothing suggests the government is considering this suggestion very seriously.

The unpalatable truth is that the whole British supersonic transport problem is still as uncertain of solution as it was nearly three years ago, when a special committee set up by the ministry of supply began to study its possible development.

The committee dutifully did its work, and came up with recommendations that detailed design should start on two types —a Mach 1.2 design for 100 passengers, and Mach 1.8 with 150 seats.

A Question of Support

Second thoughts gave rise to doubts whether these proposals went far enough, in the light of more advanced American thinking, and the ministry of supply resought the opinions of industry. In particular, the ministry wanted to know how far industry would be prepared to support the expensive development with its own money, and how far companies would be prepared to work together on the project.

The ministry thus effectively threw the ball back into the industry's court. Discussions on the possibilities of collaboration which preceded the Farnborough air display were tentative in the extreme.

Although no official disclosures were made it became known that Bristol and Hawker Siddeley might be prepared to collaborate, as would de Havilland, Hunting and Fairey (the existing Airco consortium now building the DH-121).

The supersonic airliner was tossed like a shuttlecock to and fro, with both industry and ministry knowing that in the end the project would have to be backed by the government all the way.

Just after Farnborough, industry returned the problem with a series of proposals for government support, including specific reference to future development of transport aircraft. Although not mentioning a supersonic transport as such, this project was clearly included.

Coordination Sought

The industry asked coordination of the transport aircraft needs of the armed forces, airlines and member countries of the commonwealth. It asked for measures to make full use of the forces and the airlines in helping to defray the transport development burden. It asked for measures "to expedite a specific program of technical advance" and to ensure a continued leading place for British aviation through defined means of government financial support."

All this referred to supersonic airliners, as much as to other new transports, the field of aviation on which Britain proposes to concentrate. These proposals unfortunately conincided with the approach of the general election, and did not get mature consideration from a government which did not know if it was going to remain in office.

The conservative administration is now back in power for another five years, and it is now clearly faced with the problem of deciding for or against a supersonic airliner. The decision has got to be taken soon, if Britain is not to be left behind.

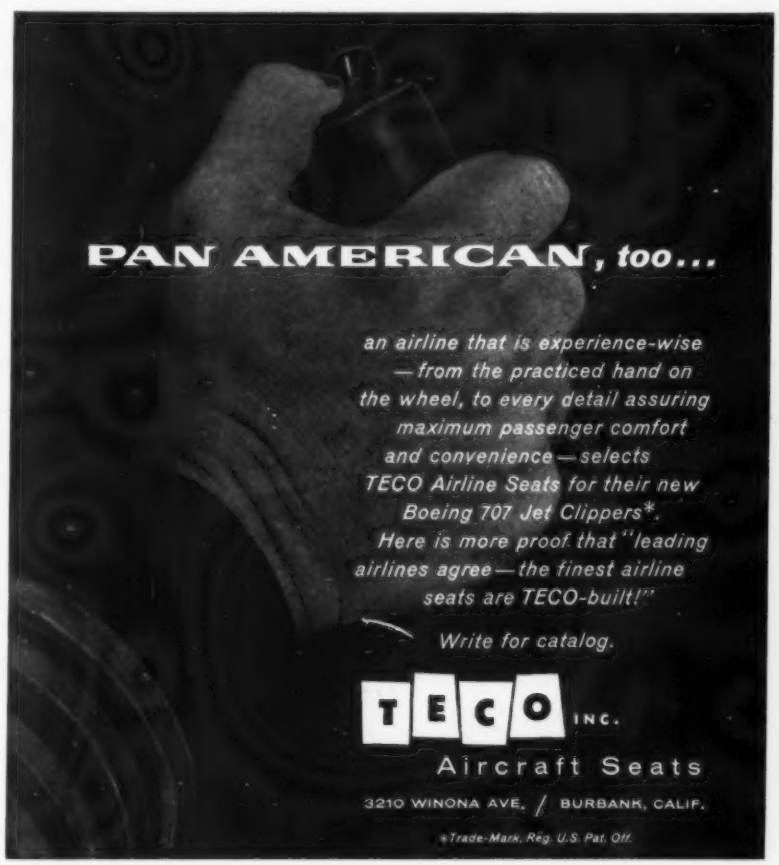
While the government and industry continue to debate supersonic airliner development, BOAC quietly has established a special study group, the supersonic transport syndicate, to assess the implications of operating such aircraft. Headed by Capt. E. C. Miles, a senior BOAC pilot, its members include D. J. N. Wakeling, senior research development engineer; P. D. R. McEwen, traffic development officer; J. Taylor, manager of operational research; and Dr. G. Bennett, research medical officer.

It's Time for Action

"The day of supersonic air transport may still be many years ahead," says the airline. "But the time to prepare for it is now, and BOAC is not going to be caught napping when it arrives."

The syndicate will study possible routes, ranges and payloads, airport facilities, air traffic control, maintenance and ground handling, and above all, the question "whether the corporation could remain competitive without supersonic aircraft if our competitors had them."

Establishment of the syndicate, says the airline, does not mean that supersonic airliners are just around the corner, or that BOAC would necessarily buy them if they were.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• **Any U.S. airport** operators who think they have an auto parking concession problem might consider those shaping up at Korea's new Kimpo International Airport. For one, there aren't enough cars in all Korea to fill one-third of the lot being planned. (A $2,000 a year personal tax on vehicles accounts for the scarcity.) One suggestion: a parking area for rickshaws. But with one U.S. dollar equal to 1250 kwan, it would take a suitcase full of money to pay one parking fee. Insurance machine and coin-operated concessions wouldn't make out too well either. Korea doesn't have coins.

• **Pacific Air Lines** has rigged up a support bar under the fuselage of its F-27s just aft of the passenger loading door. Seems that if all the weight is aft it is possible for the nose of the airplane to lift off the ground. PAL made this discovery when loading for a demonstration flight at San Francisco and the pilot suddenly found himself staring straight out at the tower.

• **Here's a** believe-it-or-not: Lowest air fare in the world is exactly $1 plus tax, maintained by Ellis Air Lines between Craig and Klawock, Alaska, a distance of seven miles. Seats are on a space available basis only. Bob Ellis, who uses Goose amphibians, says they've kept the one-buck fare more for sentiment than anything else, but it's genuine.

• **The new president** of Railway Express Agency, William B. Johnson, is a young, aggressive executive, well liked in airline circles. Typical of his attitude and thinking is this story: Following his election as president, he moved into his New York office and discovered a model of a stagecoach. Allowing as how this was slightly outdated and would be more appropriate in a museum, he had it removed. In its place is a model of a sleek new jet transport.

• **Lesson in supersonics:** Ottawa's new airport terminal opening is being delayed indefinitely as a result of supersonic jet passes at dedication ceremonies. The bill: $60,000 in glass damage.

• **The progress of aviation** is graphically illustrated by Sir Hudson Fysh, chairman of Qantas Empire Airways, Australia. "In Qantas history we have taken over more than 30 new types of aircraft," he said in a speech. "We have taken over one new type aeroplane for every 15 months of our 38 years of operation." He recalled that Qantas' first new plane was the Avro Triplane in 1922. "I ran second in it in the Sydney Aerial Derby, flying off Victoria Park racecourse. I then condemned it. It cost us 4,250 pounds and we had 6,750 pounds capital." Qantas' first planes did 70 mph and the passengers wore caps and goggles, he said, adding: "This was in the days when north of Charleville, flying into a 40 mph headwind, I had the lowering experience of being passed by a motor car."

Supersonic Jet for CAL?

Bob Six, Continental Airlines' president, proposes this 2,000-mph, $13 million jet transport for 1967 service. Manufacturers have the know-how to build the 80-passenger airliner right now, he says. Drumming up support for his company's U.S.-Hawaii route application, Six states that the plane would fly California-Honolulu in 1 hr. 40 mins., Chicago-Hawaii in 2½ hrs.

• **A new word has been coined** to describe a hotel/motel located on an airport. It's "RONtel" (RON has, of course, long been the pilots' term for "remaining overnight"). A 20-unit RONtel, to be operated principally for the benefit of people who arrive in transient aircraft, is being constructed at Tucson Municipal Airport. The new word has been registered by the Tucson Airport Authority.

• **Sign of the times:** A railroad, seeking to drop money-losing trains, was granted a hearing before a state public service commission. The railroad's chief witness: A New York economist who walked into court carrying a briefcase bearing a TWA baggage tag.

• **Once upon a time,** Jose Miguel Malagon, Cuban horse trainer, bought a round-trip ticket from Pan American and proceeded from Havana to Miami to look over some horses. He purchased a couple and accompanied them back to Havana by ship. Recently, Malagon went to PAA's office to collect the refund on the unused return portion of his ticket. The "once upon a time" was Mar. 20, 1930, but PAA made the refund without a murmur. The kicker is that in 1930 the roundtrip Havana-Miami fare was $90, and Malagon got back $45. Today, first-class roundtrip is only $40.50. So he got back four and a half bucks more than the price of a current roundtrip.

• **Not many airports** can make this statement: Operations disrupted by alligator. Eastern Air Lines' Flight 683, landing at Tampa, reported an alligator on the runway. The following events then take place: EAL operations agent L. A. Martin and crew rush to scene in pickup truck, open doors to get out. Alligator rushes truck. Crew retreats to top of truck. Alligator bites off muffler, crushes bottom of door with jaws. After half an hour, cautious crew secures alligator with rope. Alligator still mad, objects to EAL handling methods. Alligator now in zoo.

• **More and more in the news** are stories about babies that get themselves born aboard airplanes. So Eastern Air Lines, with a record of seven births so far, is giving flight attendants a refresher course in obstetrical aid to airborn babies when no doctors or nurses are available. And the new first-aid manual by EAL's Dr. Francis N. Kimball contains "instructions for attending a normal delivery."

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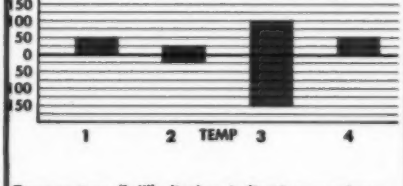
A landmark in engine instrumentation progress is the Bendix* Temperature-Vibration Monitor which simultaneously displays the findings of 40 temperature and 8 vibration sensors strategically located on all 4 engines of a turbine powered aircraft. This data is presented on the flight deck of the aircraft in bar graph form so that it can be continuously monitored and easily read.

The average displacement of 8 vibration pickups is displayed continuously on the lower cathode ray tube with the top of the bar graph indicating vibration displacement on the grid scale. This continuous monitoring of vibration immediately indicates excessive unbalance on the jet engine.

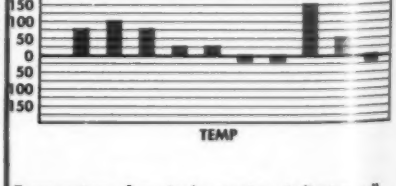
The temperature analysis normally associated with the exhaust gas thermocouples will locate faulty burners, bad combustion distribution and plugged nozzles or any unusual hot or cold conditions around the turbine engine exhaust. The temperature display in the "all" position presents maximum and minimum temperatures on the upper cathode ray tube continuously for the four engines as reference to a temperature datum set in by the operator. The individual engine temperatures can be displayed as 10 bar graphs whose deflection can be read on the tube scale as deflections above or below the temperature datum, and individual degrees may be accurately and easily read from the digital read-out dial.

The equipment, initially developed for BOAC, is applicable to all airline and military turbine powered aircraft. The equipment for the four engine installation is approximately 30 lbs. and includes the Temperature-Vibration Monitor pictured above and a remotely mounted ½ ATR short box. *TRADEMARK

Vibration indication for four engines with front and rear pickups on each. Height of display indicates total vibration displacement.



Temperature "all" display indicating maximum and minimum temperatures above and below temperature datum for four engines.



Temperature for single engine indicates all thermocouples indicating temperature above or below temperature datum reference.

Scintilla Division
SIDNEY, NEW YORK

Bendix AVIATION CORPORATION

PAR AVION

By ANTHONY VANDYK

• **A GE fan in a Caravelle?**—The life ambition of Georges Hereil, head of Sud Aviation, is to see the Caravelle in service in the U.S. One way to make the French twin-jet transport more attractive to U.S. operators is to put an American engine in it. The powerplant in question would be the General Electric CJ-805-23, the same engine that powers the Convair 600.

The GE fan engine does wonders to the Caravelle's performance, according to a study which Republic has completed for GE. Why did GE choose Republic to make this study? For the very good reason that the Farmingdale company and Sud Aviation have licensing and cooperation agreements dating back many years covering several of their own designs including the Caravelle. In fact, if Hereil gives the green light to the project, the 19th production Caravelle will be flown to Farmingdale next spring and re-engined there with the CJ-805-23.

Republic would carry out the flight test and certification programs for the GE-powered aircraft. The major advantage in using the GE fan engine would be to stretch the Caravelle's range. The full payload range would be 2,070 nautical miles. At this range the breakeven load factor would be 48%. The GE engine would also give the Caravelle a sharply reduced takeoff distance, as little as 3,500 ft. for a 350-mile stage length.

Use of the GE engine instead of a Rolls-Royce powerplant would involve few installation problems. The present engine nacelles and nacelle stubs would be replaced with similar structures designed specifically for the CJ-805-23. One airframe support had to be strengthened and new structural frame had to be provided but these modifications can be accomplished on a completed aircraft.

GE's only powerplant competitor that can markedly improve the performance of the Caravelle is the Rolls-Royce RB 141, a by-pass engine which could not be available in production quantities until at least a year later than the CJ-805-23. But Rolls-Royce is a formidable competitor and the success of the present Avon-powered Caravelle is a factor which GE does not underestimate.

• **Conspicuous absentees**—The number of absentees at the IATA Annual General Meeting was surprisingly high. Those not represented at the airline "summit" meeting included Aerolineas Argentinas, Delta, National, Olympic and Panair Do Brasil.

The aircraft and engine manufacturers were present in full force, although many of them had difficulty in making contact with their customers and prospects. They were invited as a group to only one of the four very elaborate social events which the Japanese staged for the benefit of the airline delegates. None of them were invited to the day excursion to the Japan mountains while for two evenings receptions the manufacturers were handled in a most curious manner.

One invitation was given to the industry of each foreign nation. Hence, for example, the Dutch and U.S. industries were placed on a equal footing. But since the Dutch had but one representative in Tokyo while the U.S. had in the neighborhood of 100 (including such distinguished personalities as United Aircraft's Jack Horner, Convair's Jack Naish and Lockheed's Courtlandt Gross) the arrangement was not too well received.

No one was more embarrassed about this situation than the Japanese who are traditionally gracious hosts. But for the annual general meeting, the Japanese took their orders from the IATA secretariat which, in 1959 at least, seems to have been over-zealous in its efforts to prevent the airline delegates from being worried by the people who supply equipment.

• **Never say die, say Eland**—Courageously and with the greatest of determination, Napier goes ahead to try to persuade the airlines of the world to convert their Convairs, Constellations and DC-7s to Eland turboprop power. This persevering effort, which has been in effect for several years, has paid off in the decision of the Canadian government to buy a batch of new Eland-powered Convair 440s built by Canadair.

But the main goal of having operators convert their existing equipment to turboprop power has not yet succeeded. "Yet" is the word, for Sir Archibald Hope, Napier's director of sales (air) is convinced that sooner or later the re-engining concept will catch on.

The experimental scheduled operation of an Eland-Convair by Allegheny this year confirmed the aircraft's ability to do what Napier said it would. And a gruelling 100,000-miles demonstration tour this summer carrying 5,000 passengers in the course of 300 flights exposed the Eland-Convair to most prospects on both sides of the Atlantic.

At the 1956 IATA annual general meeting in Edinburgh, Napier achieved everlasting fame by presenting each passenger who rode on Eland-Convair demonstration flights a bottle of one of Scotland's indigeneous products. And at every IATA annual general meeting since then, Sir Archibald Hope and his team have been on hand to ask the airlines of the world: "Eventually, so why not now?"

• **Sabena chops up 250,000**—It was somewhat of a pity that at just about the time Sabena proudly announced that it had carried its 250,000th helicopter passenger, the Belgian government decided to stop sending mail by rotorcraft. Fortunately, the effect on the airline will not be too great because the mail flights were used for training helicopter pilots.

The reason for the government's action in switching the mail from the helicopters to surface means was cost. And, in a country as small as Belgium with its fine railroad system, the saving in time was never very great.

The Belgian airline has never been more enthusiastic about the future of the rotorcraft, particularly with turbine power, and Sabena may well emerge as the leader of an Air Union VTOL operation linking the principle cities of western Europe, quite possibly with Fairey Rotodynes. Meanwhile, Sabena operates a fleet of eight Sikorsky S-58s and one Bell 47. Each of the S-58s has accumulated some 3,000 hours in the air. The airline's total number of helicopter hours flown since operations were started in 1950 is about 60,000, making Sabena the No. 1 commercial rotorcraft operator outside the U.S.

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By ERIC BRAMLEY

Three circus-type tents and the DC-8 comprise United's Jetarama promotion.

UAL's Jetarama: Biggest Jet Promotion

In one of the air transport industry's biggest merchandising efforts—and certainly the biggest jet sales effort—United Air Lines is touring five major U.S. cities this year with Jetarama—a "tent show" designed to spread the word about the Douglas DC-8.

Importance with which UAL views this promotion is seen in the fact that one $5 million DC-8 is being kept out of revenue service for almost two months and assigned to Jetarama. Including the expenses of this airplane, tents, personnel, displays, etc., the show is reported to be costing UAL $2.5 million this year. And it will visit other cities in 1960.

Jetarama consists of three tents and the DC-8 and occupies 140,000 sq. ft. of airport ramp area. Tents contain exhibits on jet crew training, operations, maintenance, etc. In October, the show spent a week each at San Francisco, Los Angeles and Chicago-O'Hare airports. This month it's at New York International and Baltimore's Friendship Airport.

Displays were under construction for six months, and the entire production required two years of preparation. A staff of 40 accompanies the show. Tents and exhibits can be assembled or dismantled in six hours. The production is flown from city to city by three DC-6A cargoliners.

In each city, the general public is invited to inspect the exhibits and view the DC-8 from the outside. Other guests are permitted to walk through the airplane. A third group, including UAL employes who deal with the public, receive 1½-hour courtesy rides. Twelve such flights are operated in each city, enabling UAL to take more than 1,200 people aloft—or over 6,000 for the tour.

Tents contain a J57 engine, full-scale mockup of the thrust reverser-sound suppressor, pre-loaded containers for baggage, a 15-ft. diorama model of the DC-8, mockup of a section of the first-class cabin, a display of typical meals, a display of Instamatic, the $16 million electronic reservations system UAL will introduce late next year, and a film on jet crew training.

Jetarama is under the direction of R. L. Mangold, UAL'S manager of cargo sales, who a few years ago staged a somewhat similar Cargorama.

CAB Orders Probe of All Airline Credit Plans

The rash of credit plans used or planned by U.S. and foreign airlines has led to a CAB investigation.

Included will be the Universal Air Travel Plan, fly-now-pay-later, on-line credit cards, write-your-own-ticket plans, and outside credit plans, such as Hilton Carte Blanche and Diners' Club used by Western Air Lines and Pacific Air Lines.

CAB said details of many of these plans aren't contained in the carriers' tariffs. It added that, with the exception of UATP, which was approved in 1951, it has not examined the various plans nor has it passed on the "reasonableness of the charges or the discriminatory aspects . . ."

Odds & Ends . . .

Campaign has been launched by Air Traffic Conference to obtain agreements with hotels, motels and car rental agencies to honor air travel cards for credit purposes. Customers would be billed direct, not through airlines, and firms honoring the card would pay no commissions. New streamlined plastic air travel cards are now being issued (both old and new cards are valid until Nov. 16).

Standby commuter service and book tickets will be offered by TWA on Pittsburgh-Philadelphia route starting Nov. 11. TWA had objected to a similar plan by Allegheny (*AIRLIFT*, Oct.), but CAB allowed the tariff to become effective and Allegheny instituted the new fares Oct. 4. CAB said, however, that it will start an investigation into the reasonableness of the fares. Book of 10 tickets is sold at 85% of normal first-class fare. Non-reservation standby commuters, who board after all pre-ticketed passengers have boarded, pay 65% of normal fare.

First company to use new exterior bus advertising in New York is American Airlines, which will spend $67,000 during 12 months on the "traveling billboards." "King-size" poster costs $47.50 per month per bus. Smaller exterior ads cost $6.65 and $5.70.

Seats in the five-place coach lounge are being sold on United Air Lines' DC-8s, but the eight-place first-class lounge isn't for sale. Before inauguration of DC-8 service, UAL had said it would sell both lounges. Policy switch makes available for sale 52 first-class seats and 53 coach, including the lounge.

A new magazine, *Voyager*, **is being** published by Capital Airlines and placed aboard its aircraft, replacing the seat packets. Covering a wide range of subjects of interest to passengers, the magazine will be published every two months. Advertising is being sold.

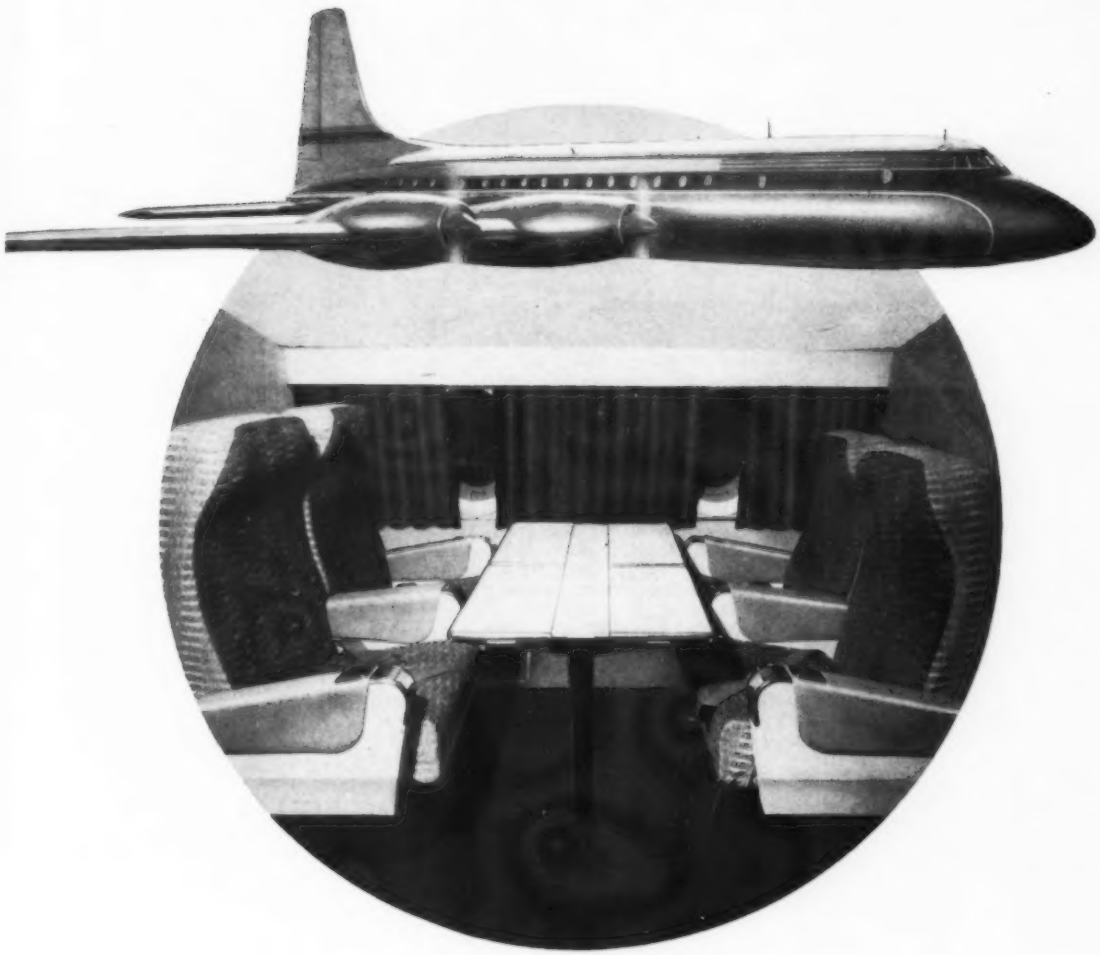
Machines and machine parts now make up United's top air freight category. Machinery gained 68% over last year, knocked cut flowers out of the top spot and into third place. Electrical equipment and parts gained 50% and moved into second.

Sales tip: Eastern Air Lines' Tampa office encourages the "I-want-info-on-your-schedules" telephone calls. When the caller says he'll phone later for reservations, EAL asks for his number and offers to call him on any day he prefers. About 60% of such calls are producing definite sales, says reservations manager W. J. Rogers.

More food service is being introduced by local service lines. On all flights to and from California, West Coast is serving fruit, hot rolls and beverage for breakfast, and salad, demi-sandwiches and beverage for lunch. On Convairs, Frontier features sandwiches, cheese, fruit, nuts and cookies. North Central, in addition to dinners on nonstop Duluth-Chicago route (*AIRLIFT*, Sept.), offers breakfast of juice, hot roll and beverage, and uses snack trays at other times.

Calendars will be sold by Japan Air Lines. A considerable number of course, will be given away to customers, agents, etc., but the airline also decided to make them available, at $1.50 each, to individuals who otherwise would not be able to acquire them. The 1960 calendar will carry color reproductions of the art treasures of Japan . . . JAL is sponsoring good music programs on WQXR New York and WFMT Chicago, FM radio stations.

BRITANNIA...



Seats by *Aerosmith* ...

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ABOUT PEOPLE

IN THE AIRLINES

SCHNEIDER

SCHEURER

Hubert A. Schneider, well known in aviation law circles, was elected v.p., general counsel and a director of Pan American World Airways, effective Jan. 1, 1960. He has been a partner in the Washington law firm of Whiteford, Hart, Carmody and Wilson, and represented Braniff Airways. Schneider will occupy the post formerly held by **Henry J. Friendly,** recently appointed to the U.S. Court of Appeals.

Robert S. Hogueland promoted from manager of labor relations of Pan Am to assistant v.p.-industrial relations. **Roger V. Rowe,** who has been assistant to the president of Panagra, named assistant v.p.

Herman F. Scheurer Jr., v.p.-administrative and legal of West Coast Airlines, promoted to v.p. and assistant to the president. All department heads will report to Scheurer.

John H. Mahoney resigned as v.p. of Seaboard & Western to become v.p.-marketing services of Capital Airlines. He was with American 17 years before joining S&W.

Attilio Di Pasquale and **Robert B. Wyland** elected assistant vice presidents in American Airlines' personnel department. Di Pasquale will continue to head labor relations. Wyland will supervise a new personnel relations division. At AA's Tulsa base, **Kenneth G. Willis** named personnel director, **Lee C. Keene** appointed director of instrument and electronics engineering.

MAHONEY

GALEZER

Dror Galezer, former deputy managing director of El Al in Israel, named manager for the Americas. He succeeds **Y. L. Koppel,** who returns to Israel as special assistant to the managing director.

Sidney J. Griffith, 20-year veteran with TWA, appointed overseas controller.

John M. Clampitt, former account executive with a Chicago advertising agency, joined United Air Lines in the new post of manager of space and agency advertising. Appointments at UAL's San Francisco maintenance base: **M. H. Pomeroy,** supt. of powerplant overhaul engineering; **Fred Searls,** staff engineer-powerplant operations and performance; **D. L. Davis,** staff engineer-powerplant installation systems.

Earl E. Jochim promoted from comptroller to director of research and development of Bonanza Air Lines.

Ernest C. Davis appointed manager of Northeast Airlines' maintenance planning for jet equipment.

Major reorganization is underway at Ozark Air Lines. **Joseph H. FitzGerald,** executive v.p. and general manager, is acting as operating head until a successor to **Laddie Hamilton** is named. Hamilton resigned in August as president and board chairman. Other changes: **Clarence L. Tabor,** changed from general traffic mgr. to assistant to FitzGerald; **S. F. McCullough,** from general sales mgr. to director-operational planning; **Rex Creighton,** from purchasing agent to director of properties and purchasing; **Henry L. Sweezy,** from traffic mgr. to director of administration and economic controls; **Charles C. Mounts,** from supt. of stations to director of customer services; **Paul J. Rodgers,** from interline and public relations director to pubrel director; **Francis M. Higgins,** from advertising and publicity director to advertising and sales director; **Julian A. Wiggins,** from supt. of flight operations to director of operations and maintenance.

George P. Braender, formerly with Varig, Braniff and Pan American, named agency sales manager for Eagle Airways (Bermuda) and Eagle Airways (Bahamas).

James O. Lasseter Jr. promoted by Southern Airways from sales mgr. in Columbus, Ga., to system manage. of community relations.

AMONG THE SUPPLIERS

Donald V. Edwards, shifts from sales coordination mgr. to mgr. of airline sales for Fairchild Engine & Airplane Corp., and **Philip G. Mack Jr.** becomes mgr. of corporate sales. **Warren R. Smith,** who headed the Applied Science division, named assistant to the president of Fairchild, and will handle public relations and advertising. **William G. Key** resigned as pubrel director.

STUART

HUNSAKER

D. M. Stuart, former head of FAA's test development and evaluation center, named v.p. and general mgr. of Hazeltine Technical Development Center . . . **David G. Hunsaker** appointed sales development manager of Frank G. Hough Co.'s Payloader section . . . **Richard W. Harbison** joined Lear Inc. as assistant to the executive v.p. . . . **Kenneth R. Patrick** is new board chairman and a director of Canadian Vertol Aircraft Ltd . . . **Scott H. Hanville** named mgr. of aviation sales and application engineering for Jack & Heintz . . . Beech Aircraft appointed **Robert G. Oestreicher** as coordinator of distributor sales and **Henry W. Ryan** mgr. of marketing research.

OTHERS IN AVIATION

F. Russell Hoyt named executive secretary of American Assn. of Airport Executives, headquartered in El Paso, Tex. He has been assistant to Panagra's chief pilot, Miami, and managed several airports for the airline in South America.

R. F. Deuel appointed mgr. of Hertz Rent A Plane System . . . **Willard E. Mills** named maintenance supt. for East Coast Aviation Corp., Lexington, Mass.

for removal of snow and ice on runways...

THE U. S. AIR FORCE SELECTS . . .

The Ice Blades are attached to the truck frame between front and rear axles . . . completely reversible to right or left. Blade can be tilted to conform to pavement . . . all hydraulic power controlled from cab. Trucks also equipped with WAUSAU 3-Way Snow Plows.

WAUSAU TRUCK GRADER ICE BLADE

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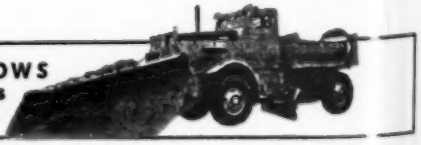
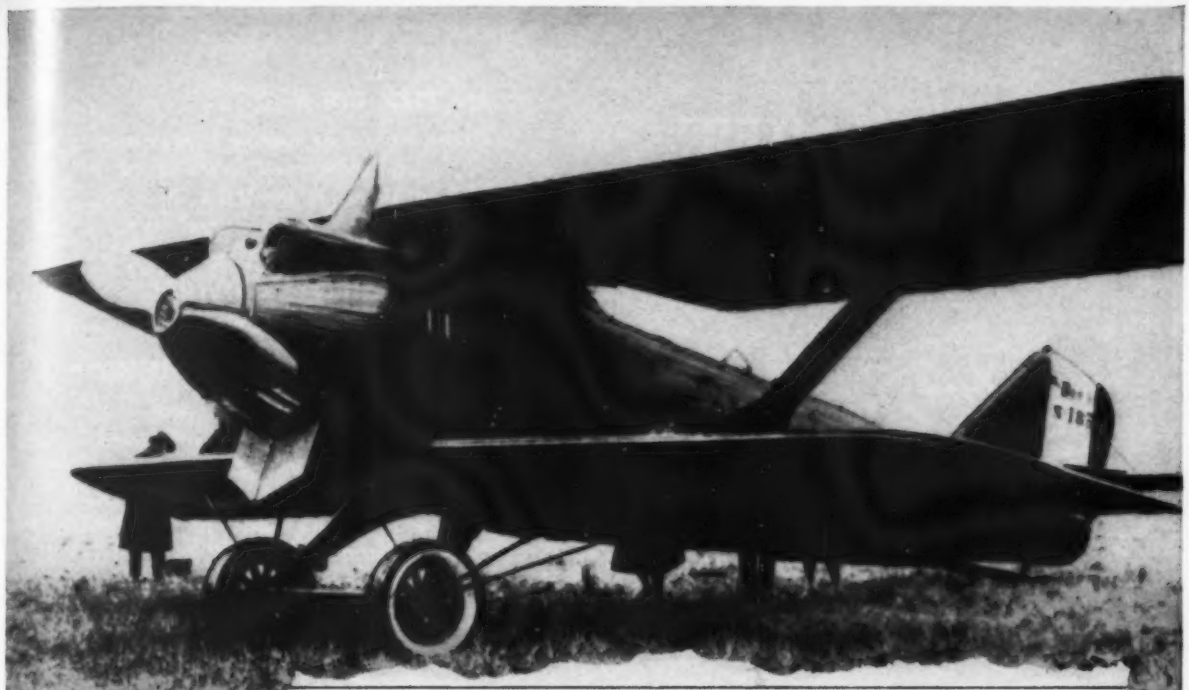


WAUSAU IRON WORKS
Pioneer Snow Plow Builders
Truck Patrol Ice Planer and Material Spreaders
WAUSAU, WISCONSIN



FRENCH FLYING ACE ESTABLISHES FIRST TRANS-AFRICA AIR ROUTE BETWEEN FRANCE–MADAGASCAR!

COMMANDER JEAN DAGNAUX LINKS PARIS, TANANARIVE

Jean Dagnaux

Tananarive, Madagascar, Feb. 10, 1927 – Commander Jean Dagnaux, famous World War flying ace, arrived here today after a daring series of flights from Paris. He piloted his Breguet 19 through Spain, over the Mediterranean, across the Sahara, and down the length of Africa to realize his lifelong ambition – the completion of an overland air route connecting

FIRST IN INTERNATIONAL AIR TRAVEL! The exploits of brave French airmen like Blériot, Bossoutrot, Noguès, Mermoz and Dagnaux have made aviation history since the very beginning of international flight. Air France still follows this great French tradition of leadership in aviation. Today Air France offers the most non-stop flights between New York and Paris and the fastest jet service in Europe and the Middle East aboard sleek, swift Caravelle Jets. Next year Air France plans to cover the world's most extensive route network with one of the world's largest pure-jet fleets, featuring the world's largest, fastest, most luxurious airliner–Air France 707 Intercontinental Jet.

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Electra flight is an exciting new experience . . . quiet, smooth travel on the fastest prop-jet airliner in the U.S.A. Truly a rare adventure in modern travel elegance.

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"Gold Service" brings unqualified enthusiasm from all. Superb is the word for it! Air travelers enjoy the most magnificent meals aloft and the many thoughtful "extras" . . . at no extra fare . . . aboard Braniff's famed "El Dorado," DC-7C, or the "New El Conquistador" DC-6.

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New Routes Proposed for Two Locals

Major route extensions for Lake Central and North Central are recommended by CAB Examiner Barron Fredericks in the Great Lakes Local Service Investigation.

LCA was recommended for three-year certificates covering 1,727 new route miles and service to 16 new cities through 13 additional air terminals. Routes recommended were: Detroit-Pittsburgh via Toledo, Sandusky, Cleveland, Akron/Canton and Youngstown; Columbus to Baltimore via Zanesville, Wheeling, Morgantown and Washington, D.C.; Cincinnati to Baltimore via Portsmouth, Parkersburg/Marietta, Clarksburg/Fairmont, Elkins and Washington.

Also, Charleston, W.Va., to Erie, Pa., via Elkins, Clarksburg/Fairmont, Morgantown, Wheeling and Pittsburgh; Bloomington and Columbus, Ind., to Cincinnati; Columbus, O., to Akron/Canton; Portsmouth to Columbus; Lima-Detroit via Findlay and Toledo; Columbus-Cleveland nonstop; Grand Rapids to Columbus, O., via Jackson, Toledo and Mansfield. Operations are subject to certain restrictions.

North Central would receive three-year permits for Sault Ste. Marie to Chicago via Cheboygan, Traverse City, Manistee/Ludington, Cadillac/Reed City, Grand Rapids and Benton Harbor/St. Joseph; Sault Ste. Marie to Detroit via Cheboygan, Alpena, Saginaw/Bay City/Midland and either Flint and Pontiac or Port Huron; Milwaukee to Muskegon; Green Bay and Muskegon to Grand Rapids; Escanaba and Traverse City to Saginaw/Bay City/Midland; Oshkosh-Chicago nonstop. North Central's operations would also be subject to restrictions.

Allegheny Airlines was recommended for extension from Huntington, W.Va., to Louisville, Ky. American, Capital and TWA would be suspended at several points served by the locals.

RO[illegible] DUP OF ACTIONS

ACT[illegible]NS

TW[illegible] and Hughes Tool Co. were allowed to continue day-by-day lease of Boeing 707-131 jet aircraft from Hughes to TWA for an indefinite period. The companies have not yet concluded financing arrangements permitting TWA to operate the jets on a permanent basis.

United States Overseas Airlines received CAB permission to issue passenger tickets on presentation of exchange orders by American Express Co. It was the first supplemental carrier to receive such an exemption from board regulations.

Recommendation that Ft. Lauderdale be added as a co-terminal with Miami on routes of Capital, Delta, National, Northeast, Northwest and TWA was made by CAB Examiner Ralph L. Wiser. The city should also be added as an intermediate between Miami and West Palm Beach for EAL and NAL, he said. Recommendations are subject to certain operating restrictions.

Frontier Airlines was authorized to suspend service temporily at Lusk and Douglas, Wyo., two points that it was awarded in the Seven States Case. CAB said traffic at the towns was so small that FAL can drop them even though it has not served them for a full 18-month trial period.

TWA received permission to serve St. Louis and Chicago as consecutive points on flights carrying cargo and mail only, provided it does not discharge property enplaned at St. Louis in Chicago or vice versa.

Linea Expresa Bolivar should be granted a foreign air carrier permit to operate between Venezuela and Miami via points in the Netherlands West Indies and Jamaica, CAB Examiner Curtis C. Henderson recommended.

Trans-Canada Air Lines was approved to serve Chicago through O'Hare as well as Midway so long as it does not serve both airports on one flight.

CAB instituted an investigation into, but did not suspend, a tariff filed by Pacific Air Lines calling for coach fares from Palmdale, Calif., to Bakersfield, Oakland, Sacramento, San Francisco, San Jose, Monterey and Stockton. Investigation was made part of CAB's already-instituted probe into lawfulness and reasonableness of existing Pacific coach fares.

APPLICATIONS

West Coast Airlines applied to suspend service at LaGrande, Ore., until 60 days after decision in the West Coast renewal proceeding. Traffic is meager and suspension would help reduce expenses, WCA said.

Pacific Air Freight and Ace Air Freight Co., forwarders, asked CAB for permission to merge. Stockholders of the companies have approved the move.

Pan American World Airways applied for permission to provide mail service to and from Canton Island.

Airlines Transport Carriers d/b/a/ California Hawaiian Air Lines complained to CAB that The Flying Tiger Line conceived and assisted Pacific International Airways, a Part 45 carrier, in violation of the Act. It alleged that the Tigers participated in organization of PIA, helped it financially, leased it an airplane and used it to "bid for carriage of passengers and cargo on contracts with MATS within the small business set asides."

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- All retreads fully dependable, fully guaranteed. Customers include U.S. Air Force and major airlines.
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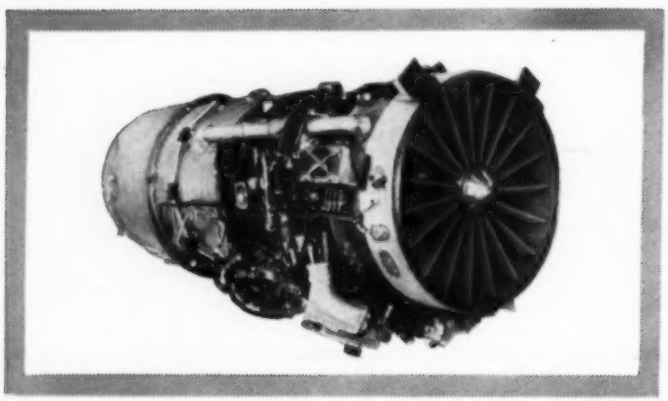
ROLLS-ROYCE BY-PASS JETS

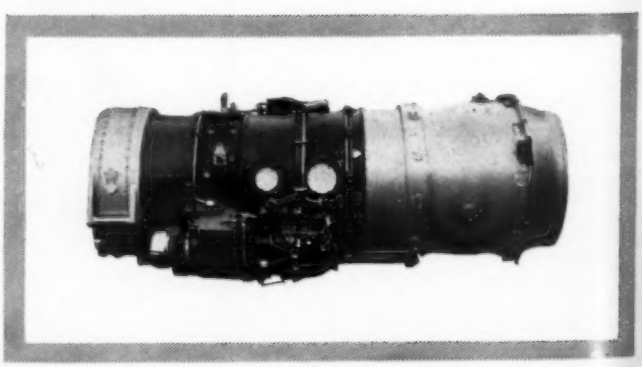
are now flying in Boeing 707-420 and Douglas DC-8 jet airliners

The by-pass or turbo-fan principle proved by the Conway is now generally accepted as the correct formula for all high speed subsonic jet transports.



Conway by-pass jets for civil use will enter service in 1960 at 17,500 lb. guaranteed minimum thrust. The Civil Conway is being developed to powers over 20,000 lb. thrust with improved fuel consumption.

The RB. 141 family of by-pass jets (10,000 lb. to 17,500 lb. thrust) have been designed to give the best possible operating economics for jet transport aircraft. The RB.141 of 14,300 lb. thrust will power later versions of the Sud-Aviation Caravelle and the RB.163 of 10,100 lb. thrust has been chosen to power the Airco DH.121.



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ROLLS-ROYCE LIMITED, DERBY, ENGLAND

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Map at right shows TWA's coast to coast phone hookup which links 12 stations.

Instant Maintenance: TWA's Jet Formula

KANSAS CITY, MO.—A new concept of airline maintenance utilizing high speed communications to meet the demands of jet schedules is paying big dividends here for Trans World Airlines.

Unquestionably it is the most advanced step taken by an airline management in recognizing the significance of the impact of maintenance on overall operating efficiency.

TWA's program has two facets: a new approach to field organization and the new communications network.

The organization stresses something new to airline maintenance, specialty foremen who are key troubleshooting supervisors in their respective fields.

For communications, a $10,000 a month private line telephone (PLF) network ties each of TWA's 12 key operating stations with one another and with its top maintenance, engineering and stores personnel in Kansas City. It operates around-the-clock, seven days a week. It makes maintenance communication a matter of seconds, instead of hours or days.

To R. M. "Ray" Dunn, the airline's v.p. technical services, the new approach is the only answer to airline jet maintenance. He can't pinpoint its exact savings to TWA, but he does a convincing job of making one wonder how the jets could be operated without it.

Instead of the usual teletype system of feeding mechanical delay information into Kansas City, Dunn and his top technical people know immediately what is causing field problems. And they can decide immediately what to do about it.

The Key: an intelligence center

The system revolves around a maintenance coordinator who operates an intelligence center for TWA's complete domestic operation.

It's his job to put J. Z. Kagiliery, the specialty foreman on powerplants at Idlewild directly in touch with the right maintenance engineer in Kansas City if he has a problem he can't solve.

Within easy reach of the coordinator, asst. v.p.-engineering S. L. "Sam" Higginbottom directs a 30-man maintenance engineering staff. Says Higginbottom, "it's their job to be up to the minute on what's going on with the aircraft in service.

"As an additional backstop, we have a 33-man aircraft engineering group, and it had better not get more than eight hours behind what's happening in day-to-day operations."

The coordinator has another chore. He keeps close tabs on the result of each day's mechanical operation, has a complete scoreboard ready the next morning when v.p. Dunn holds a briefing session with all of his key supervisors.

Dunn usually heads these sessions personally, is quick to raise a question about corrective action if a major problem appears to be brewing. And the results of the briefing do not re-

Dunn and his key supervisors conduct early morning briefing. Clockwise from open end of table: V. L. Walstrom, dir. maint. & ovhl., planning; J. T. Davis, system dir. maint.; A. A. Shaunty, dir. tech. purchasing; F. G. Betts, v.p. purchasing; F. L. Spruill, dir. powerplant ovhl.; A. E. Jordan, asst. v.p. maint. & ovhl.; R. M. Dunn, v.p. tech. services; F. W. Toyne, mgr., maint. engr.—aircraft; S. L. Higginbottom, asst. v.p., engr., flight test & insp.; J. L. Gaiser, dir. airframe ovhl.; W. F. Griffith, dir. gen. purchasing; E. B. Monsees, dir. warranties; L. E. Wade, FAA coordinator (at podium).

Maintenance coordinator J. C. Rhawn, flanked by dials for east and west circuits of TWA's PLF system, operates the airline's maintenance intelligence center on one of three shifts a day. At his fingertips are parts catalogs, maintenance manuals and a battery of 30 engineers.

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MAINTENANCE

main a "Kansas City secret." They are broadcast over the PLF system for the benefit of supervisors throughout the system within an hour. To get all stations on the PLF at once, the coordinator simply dials 21-071.

Probably the biggest advantage of the phone network is fast field coordination. As soon as a jet takes off from Idlewild, the specialty foreman there is on the line with his counterpart in Los Angeles giving him a complete rundown on the condition of the aircraft. Such post departure reports are mandatory for jet flights.

If a log squawk could not be handled, he tells him why, what sources were checked and where to look next. When the 707 lands at Los Angeles, a crew is ready to tackle the problem without a minute's delay.

A water injection problem

Dunn cites one instance typical of the speed of PLF maintenance. Over one weekend early in 707 service, a siege of water injection system problems hit TWA. The main water lines wouldn't stay together at coupling points due to their large diameter and thin wall construction (TWA engineers describe the gauge as "oh too thin").

As reports began to hit the coordinator's desk one Saturday a.m., a decision was made to come up with a fix. Engineers were contacted in their homes. An inner liner was designed, fabrication scheduled in the shop, and within 24 hours parts were on their way to New York and Los Angeles for field installation.

The specialty foremen provide the field know-how that makes the PLF system pay off. TWA designates one "in charge," has others for powerplants, radio and electronics, instrument and electrical.

In addition, at both Los Angeles and San Francisco, one foreman handles systems and structures. At Idlewild, systems are a full time job. Here a separate foreman takes on structures and cabin equipment.

Dunn credits J. T. Davis, system director of field maintenance with the PLF system concept. He now has hopes of extending it one step further —into the plant of the manufacturer. It already has a "drop" for the circuit in its representative's office at Lockheed, and Convair has agreed to a similar hookup once the 880 enters service. Now Dunn is working on a PLF line to Seattle to pipe 707 experience right into Boeing's plant, thereby erasing another time gap in airline maintenance.

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EQUIPMENT WORLD

The introduction of the jet transport has brought with it a new and more taxing demand on pilot skill, particularly during those few seconds when the aircraft is approaching lift-off speed. And, since the coming of the jet, the industry has asked for and manufacturers have worked to develop instrumentation that will aid the pilot in making his decision "to go or not to go" an easier and more accurate one.

The instruments that have been developed to fit this need have assumed the label takeoff monitors and this edition of Equipment World provides some details on what they have to feature.

Hamilton Standard

Combined electrical and pneumatic operation is found in Hamilton Standard's monitor, which will weigh about 7 lbs. The unit takes runway length, brake factor, indicated airspeed and take-off distance into consideration, shows pilot how close to end of runway he can stop.

Write: Dept. A/L, Hamilton Standard Division, United Aircraft Corp., Broad Brook, Conn.

Sperry

Sperry Gyroscope Co. has a take-off monitor already in production. The all-electrical unit will weigh approximately 6½ lbs., and will cost in the neighborhood of $5 to $6 thousand. Flight testing is complete, and Sperry is accepting orders. It features accelerometers fed information from sensors.

Write: Dept. A/L, Sperry Gyroscope Co., Great Neck, New York.

Oster

John Oster Mfg. Co.'s unit is known as Advisor II. It provides the pilot with a continuous indication of required airspeed buildup to V_1 velocity by an index on a standard IAS indicator. When IAS falls below the minimum required value before V_1 velocity is reached, an amber danger light comes on.

A pointer on the IAS indicator shows actual airspeed. V_1, rotation or lift-off references, shown by an interior index, may be set at the pilot's discretion by a knob on the face of the instrument.

The equipment is in two parts, has an airspeed indicator and a control panel.

Write: Dept. A/L, John Oster Mfg. Co., Inc., Avionic Div., 1 Main Street, Racine, Wis.

Safe Flight

Safe Flight Instrument Corp.'s SCAT (Speed Control-Approach/Takeoff) combines two systems, one of which measures forward acceleration and the other the relative lift coefficient of the wing. The two measurements are fed to a single pointer which will indicate the pilot's target V_2 climb condition.

SCAT weighs about 17 lbs., and is designed to be fail safe. It is entirely electric in operation. It serves a dual function, can be used equally well for approach and landing.

Write: Dept. A/L, Safe Flight Instrument Corp., 4 Water St., White Plains, New York.

Avien

Under development by Avien, Inc. is a takeoff monitor which will differ from its 1958 model. Few details on the new design are available, but it is reported to be extremely light, simple to operate and designed for retrofit in existing aircraft at minimum expense.

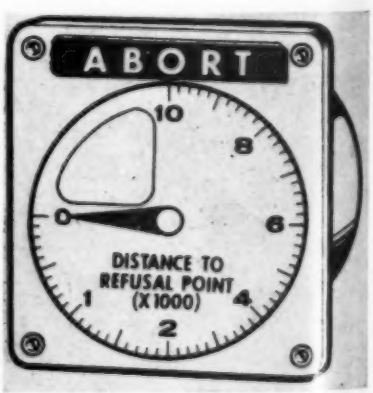
Avien's previous model measured elapsed runway by a pulse generator on the main gear, and compared attained ground speed with that required for normal takeoff. It weighed about five lbs. The new unit, however, is expected to differ considerably in operating principles.

Write: Dept. A/L, Avien, Inc., Woodside 77, New York.

Doman

Doman Helicopters, Inc. has DARTO (Doman Acceleration Rate Takeoff) which is a fail safe instrument which computes takeoff entirely from information secured during first 200 feet of roll. Weighing 6 lbs. and costing approximately $6,000, it is all electronic in operation.

Write: Dept. A/L, Doman Helicopters, Inc., Danbury, Conn.



Honeywell

A computer in the equipment bay is the hub of Honeywell's system, which includes a control panel and indicator. An accelerometer and odometer collect data, feed it to the computer, which triggers a green "go" or red "abort" signal in the indicator. A moving pointer shows distance to refusal point.

Write: Dept. A/L, Military Products Group, Honeywell, 2747 4th Ave. S, Minneapolis 8, Minn.

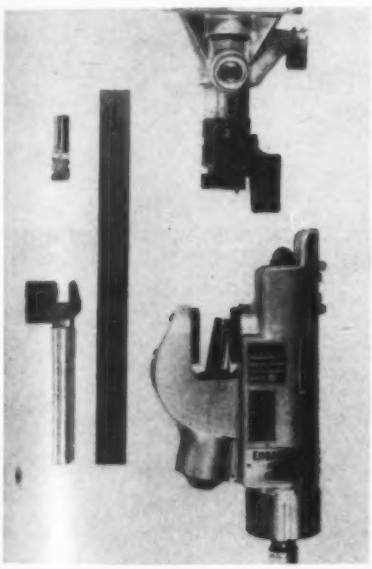
NEW PRODUCTS

Deflecting Fence

A louver type blast fence for jet aircraft has been designed by Boeing and the Blackstone Mfg. Co. of Chicago. The steel fence is louvered to permit improved visibility.

Boeing-Blackstone fences are in use by the USAF at several military bases and by municipal airports in Newark, Seattle, Wichita (Kansas) and Idlewild. The fence is due to be erected at Chicago's municipal airport and at O'Hare Field.

Write: Dept. A/L, Blackstone Mfg. Co., Inc., 4630 W. Harrison Street, Chicago, Ill.



Self-Sizing Fasteners

A new line of self-broaching and self-sizing fasteners is available from Huck Mfg. Co., Detroit. The Huckbolt fasteners feature interference fit, said to result in positively leakproof joints.

The new line uses the same driving tool required for other Huck fastener designs; it is adapted to double-driving by adding an accessory valve and switch near the air intake.

Write: Dept. A/L, Huck Mfg. Co., 2480 Bellevue Ave., Detroit, Mich.

Quick Hose Connector

A Quick Hose Connector which will mate a charged hose to a matching receptacle has been announced by Besler Corp., Oakland, Calif. Designed for use with compressed air to start jet aircraft engines, the connector permits the operator to plug a charged hose directly into an airline receptacle, and disconnect by

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NEW PRODUCTS

simply pulling it out, thereby causing an automatic shut-off of air flow in the hose as well as in the airplane.

The connector will accommodate up to 4,000 psi pressures. Burst pressure is 20,000 psi.

Write: Dept. A/L, Besler Corporation, 4053 Harlan St., Emeryville, Oakland, Calif.

Air Pen

An engraving tool operated by air pressure has been introduced by the Thor Power Tool Co., Aurora, Ill. Used for engraving parts numbers on aircraft and missile components, and for making jigs, tools and fixtures in general, the pen is said to have a longer working life by virtue of fewer moving parts.

It can be handled like a conventional writing pen or pencil. It weighs 9 oz., is 7¾ in. long, and has an 11/16 in. diameter barrel.

Write: Dept. A/L, Thor Power Tool Co., 175 N. State St., Aurora, Ill.

INFO FOR THE ASKING

Pump spec. sheets—Curtiss-Wright offers catalog sheets on two pumps: model 102 lightweight, turbine-driven fuel pump and model 188 water injection pump.

Write: Dept. A/L, Sales Dept., Curtiss-Wright Corp., 6767 Hollister Ave., Goleta, Calif.

Radar bouncers—Reflector antennas for radar control and celestial work are highlighted in a new booklet by Blaw-Knox Co. The 12-page booklet lists specifications for variety of antenna types.

Write: Dept. A/L, Blaw-Knox Co., Blaw-Knox Equipment Div., P.O. Box 1198, Pittsburgh 30, Pa.

Radio altimeter—Spec sheet on Intercontinental Electronics' model AM-220 radio altimeter describes lightweight, transistorized unit for operation in the 0 to 1,000 ft. range.

Write: Dept. A/L, Intercontinental Electronics Corp., 1551 Franklin Ave., Mineola, N.Y.

Baggage computer—Illustrated brochures describe baggage scales and automatic baggage computer made by Detecto Scales, (see New Products). Detecto also proffers analysis of cargo handling system for airlines.

Write: Dept. A/L, Detecto Scales, Inc., 540 Park Ave., Brooklyn, N.Y.

GE gas turbines—Bulletins describing youngest members of GE's gas turbine family—the J85 and T64—give data on engine design, performance, test progress and current and proposed applications.

Write: Dept. A/L, General Electric, Schenectady 5, N.Y.

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EN ROUTE

Wayne W. Parrish

Afghanistan Leapfrog

Afghans Try to Hop Centuries But Tradition Often Wins Out

It was like entering a completely different world to step off the Aeroflot IL-14 from Tashkent at Kabul, the capital of landlocked and mountainous Afghanistan.

And so it is a different world. As one local resident expressed it, Afghanistan is rushing headlong from the thirteenth to the sixteenth centuries with a very few slight overtones of the twentieth.

Far off the beaten tourist paths, Afghanistan is a kingdom of some 12 million Moslems occupying a rugged, arid land of 278,000 square miles, about the size of Texas.

There is not a mile of railroad track in the country. Communications are very bad—you're lucky if a telegram gets out in three days.

On the north is a 700-mile border with the Soviet Union. A small finger in the mountainous northeast borders on Red China. On the east and south is Pakistan, and on the west is Iran.

Average elevation of the entire country is 4,000 feet, Kabul sits at 6,000 feet. The mighty Himalaya mountains extend into the country through the Pamir and Hindu Kush ranges, with peaks up to 21,000 feet.

Half the population consists of nomadic pastoral tribes living in tents and moving about with the seasons. There are many small villages scattered about in valleys and many of the people never have been out of their own regions.

Typical problem: the weather

The climate is good only for a few months each year. In the summer it is very hot and quite dusty and dry. In the winter it is raw cold with rain and snow. But spring and fall bring brilliant cloudless skies and moderate temperatures.

The seasonal nature of the rainfall means that the country is extremely arid. Early spring floods wash out bridges and do considerable damage, and as yet there is little provision for catching and saving the water. It is a hard life on that barren, rugged terrain where a water hole or a spring is depended on for existence.

Best known feature of the country is the famed Khyber Pass which connects Afghanistan with Pakistan, formerly old British India. For centuries the country has been a buffer between the Russians (who began imperialist activities long before the Communists) and India and the Indian Ocean. The British were dominant in the country for many years, standing guard against further Czarist expansion.

It is an extremely colorful country, a pageant of costumes and headgear and wonderful and expressive faces. Until a few months ago for a special international occasion, no Afghan woman ever showed her face in public. The veil so closely identified with the rigid Moslem faith is worn everywhere outside the home. Women are not permitted to work or train for jobs, or even to be educated beyond a minimum of learning, except, of course, for household drudgery. About 95% of the people are illiterate but steps are being taken to open more schools.

From a tourist standpoint, the country is "unspoiled." Only in a few things such as the paving of the main streets of Kabul a few years ago, the use of buses, electric power (which may go out anytime), and the airplane, has the country been "westernized" or "modernized." Camel trains can be seen any day making their way through the main streets. Afghanistan is a step back into history, not into the 19th Century, but perhaps the 16th Century with a few exceptions as noted.

But it will be some time before Afghanistan is equipped to receive all but the hardiest visitors. The only hotel in Kabul is below tourist standard. They are lucky indeed who can stay with friends or in an embassy compound. My wife and I were fortunate to be the guests of Mr. and Mrs. Frank Swayze. Their guest house within their walled compound was quite comfortable. Swayze is the executive vice president of Ariana Airlines, managed by Pan American World Airways under a technical assistance program of the International Cooperation Administration.

If Afghanistan was a buffer country for the past few centuries, it is a prestige battleground today between East and West. Both the U.S.S.R. and the U.S.A. are competing in development and technical assistance programs, our country representing in broad fashion the entire west. It is a fascinating competition in which we sometimes gain and sometimes lose, but the beneficiary in any case is a country that is trying to leapfrog not from one century to another but over a span of about three centuries.

When Khrushchev and Bulganin visited Afghanistan in 1955, the Soviets offered loans and technical assistance with big gestures of magnanimity. Actually, there have been few gifts from the Soviets, mostly lines of credit. But thanks to the credits, Kabul got some street paving and some buses. The first batch of buses were soon ready for the junk pile because of the rough streets; all the glass fell out. Later Soviet buses have been better. In return the Afghans are repaying with wool, caracul, fruit and other products.

Russians take on military projects

The Russians pulled a real coup by taking over the training of the Afghan military forces, building a military base and airfield north of Kabul, and getting a commitment to modernize the commercial airport at Kabul. The military base is completed or soon to be, but until very recently not a bit of work had been done on the commercial airport. I now have word that construction is underway, but that the U.S. may take over the responsibility for building a much needed terminal.

Francis J. Swayze, exec. v.p. of Ariana Airlines in yard of his compound in Kabul, capital of Afghanistan.

Scene on one of Kabul's main streets.

Airport terminal at Kabul.

Photos by WWP.

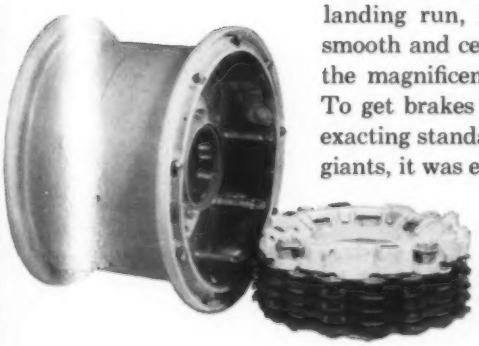
The U.S. is assisting in education, highways, agricultural projects, irrigation, all civil airfields except at Kabul, and civil air transportation. One of the big irrigation projects was a magnificent bust, but some of the other activities are working out well. And in this latter category is Ariana, managed by PAA, although the headaches, frustrations, complications, and the like, are beyond belief until you actually visit the country.

When I was there in October of 1958, some $2 million in airway aids and radio equipment shipped by FAA was still crated and sitting in the sand after a year, awaiting decisions by the Afghan government. I understand all or most is still just sitting in the sand. Projects that would take a week in the U.S. require a year in Afghanistan—the ratio is that much. By and large, the U.S. assistance program is okay. I wouldn't think so sitting in Washington, but on the spot one can appreciate the extreme difficulties of making progress in a country trying to leapfrog from camel trains to the 20th Century in a short time.

Need some help? Sure, employ Afghans. But it takes a lot of training for a man who has never known the age of the wheel, much less a motorized wheel. Want a secretary? There aren't any. Afghan girls aren't trained nor permitted to work—all secretarial help must be imported. Want to talk to somebody? The telephone just went on the blink again.

I hope I can bring you a little of the color, the fascination, and the frustrations of a most interesting country.

JETLINERS DEMAND JET-AGE BRAKES



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